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## Original Articles

### THE SPLENOMEGALIAS*

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The spleen belongs to the reticulo-endothelial system, and has the characteristics of a hemolymph gland. It is of little value to man physiologically, but its pathologic possibilities are grave. In the early months of fetal life, the spleen is one of the sources of the cellular elements of the blood. So far as the red blood cells are concerned, the spleen loses its power of production before birth, but maintains throughout life a moderate production of lymphocytes. Like the appendix, tonsils, and lymph glands, the spleen becomes senescent in early adult life, and in middle and later life, senile changes are marked. Of the organs of the reticulo-endothelial system, the spleen is the most unstable. It undergoes marked pathologic changes from causes not arising within itself, but resulting from disturbances in other organs, and when once morbid processes are set in action they tend to become chronic, and slowly progress to a terminal condition, little affected by treatment, with few exceptions.

Interest centers around the reticular cells described by Metchnikoff as microphages. Krogh introduced a new science by methods of cytologic study of the development and function of living cells and surviving tissue. Rowntree and Chaney are now carrying on a similar study in connection with the spleen in the Foundation laboratories. They introduce dialyzed dyes into the circulation of the spleen and liver for the purposes of study. These studies verify certain views on the subject which had gradually grown out of clinical experiences.

As clinicians, we are naturally more interested in the practical side of the subject, and I shall, therefore, confine my remarks to a perspective which has been gained through the pre-operative examination of patients in whom there were determinable changes in the physical condition and functions of the spleen, and through operative findings at splenectomy. These observations have been checked so far as possible with the history of the patients subsequent to the operation. From these data useful methods may be formulated for the management of the various splenomegalias, as they are met in practice.

It is unfortunate that the normally situated spleen must be approximately twice normal size before the enlargement can be detected. Splenic percussion is a fallible diagnostic aid. Unless the spleen can be actually palpated under deep inspiration, one cannot be sure of its physical condition. Much of our early knowledge of the spleen, as of all other deep-seated organs, came from the post-mortem room, but, as a matter of fact, in routine necropsies, the spleen seldom shows changes that are connected with the cause of death. Therefore, only in the splenomegalias, when the size of the spleen has attracted direct attention, have we been able to estimate at all closely its influence in causing death. The earlier splenic changes, before the spleen is sufficiently enlarged to be palpable, are as yet undetermined, except inferentially, and from observations of the spleen made in the course of abdominal operations for other causes in which anemia or changes in the liver exist.

One important conclusion, at least, can be formulated. The spleen does not often act on its own initiative, but rather as an agent of destruction, set in action by influences over which it has no control. In removing the spleen, therefore, one removes an agent of destruction, not necessarily the cause of the disturbance; the effect may be to cure or relieve the patient of manifest symptoms, the essential cause of disease being rendered ineffective by removal of the agent of destruction.

#### THE RELATION OF THE SPLEEN TO THE BLOOD

A fascinating theory, advanced by certain hematologists, is that the white cell is the primitive cell, from which the red cell has descended. The earliest blood found in the human fetus is white. The lower orders of animal life have white blood only. The spleen is an organ which retains throughout life its ability to produce primitive types of white cells. It may not be wholly fancy to regard splenomyelogenous leukemia as an evidence of reversion of the spleen and other reticulo-endothelial organs to their most primitive function, and one might say, without departing greatly from fact, that this disease, characterized by the development of an enormous number of functionless, embryonic white cells, is cancer of the white blood.

The function of the spleen after birth is largely concerned with the destruction of deteriorated red cells. Acting as an agent of destruction, the spleen, enlarged through any one of various causes, destroys an excess of red blood cells, as in splenic anemia and hemolytic icterus. Again, if the hematopoietic system cannot produce normal red-blood cells, the spleen may destroy subnormal red cells, which are capable of functioning and the best the body can produce, thus acting to produce an anemia, which, as Eppinger believes, takes place in pernicious anemia.

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### THE RELATION OF THE SPLEEN TO THE LIVER

The relation of the spleen to the liver is as direct as its relation to the blood. The spleen has a relatively enormous arterial blood supply, but its venous blood becomes part of the portal circulation. This corresponds with the clinical finding that the spleen is an ineffective organ acting as an aid to hepatic function. Thus, the spleen mechanically filters out microörganisms and toxins of colloid size, and sends them on to the liver for destruction. The liver acts on non-oxygenated blood; possibly a by-function of the spleen is to remove oxygen. In specific splenomegalias, such as malaria, the plasmodia may remain indefinitely in a sluggish spleen because of not being sent to the liver for destruction, and from the spleen they act as reinfecting agents. This appears to be true of other protozoa, such as the spirochete of syphilis, and of bacteria, such as the bacilli of tuberculosis, and the pyogenic group of organisms. It requires little imagination to see, in hepatic cirrhosis, an attempt of the liver to encapsulate diffuse poisons carried to it through the portal circulation which it has not been able to eliminate or detoxicate. In the removal of the spleen, not only a reduction of the portal circulation is affected, perhaps to a point at which the cirrhotic liver may be able to function properly, but also various noxious agents are prevented from reaching the overburdened liver through the agency of the portal circulation.

With this brief introduction I shall describe, as fully as my limited knowledge permits, the conditions for which the spleen has been removed in our Clinic, giving the immediate results and, as far as possible, the subsequent condition of the patient. The classifications are necessarily faulty, for while it may be said that a certain splenomegalia is caused by a specific microörganism, the result, so far as the condition of the patient is concerned, may depend more on the splenomegalia *per se*, than on the offending organism.

### HEMOLYTIC ICTERUS

To Elliott and Kanavel we are indebted for the best description of hemolytic icterus. This malady is a splenomegalia which affects chiefly the red blood cell, and is of two types: the one described by Minkowski as congenital or familial, and that described by Hayem and Widal as acquired. The congenital or familial type may occur in several members of the same family, and perhaps for several generations. The patient, perhaps from birth or early childhood, is jaundiced, has an enlarged spleen and an enlarged liver, and is subject to sudden so-called crises in which there is a temporary increase in the size of the spleen and liver, increase of the jaundice, fever, and malaise, which last for some days and gradually merge into the usual condition of more or less chronic icterus. In every community are to be seen persons with so-called chronic biliousness of this description, some of whom may live to the fifth or sixth decade. Usually death results from anemia or intercurrent disease before middle life.

The acquired type of hemolytic icterus comes on later in life, often in the adolescent period, pursues a more rapid course, and, as a rule, in the course of a few years ends in death from anemia or intercurrent disease. The outstanding feature in such cases is the fact that the jaundice is not obstructive. The stools are normal in color, and there is no bile in the urine. In our experience, 60 per cent. of the patients, even the very young, have coincident pigment gallstones due to the enormous number of destroyed red corpuscles, the pigment of which forms the pigment of the bile. The gallstones sometimes give rise to biliary duct infections, which account for the occurrence of a confusing obstructive jaundice in the occasional patient with hemolytic jaundice.

I observed my first case of hemolytic icterus about twenty years ago. The patient was a young girl with a history of jaundice from infancy. At the age of nine years she had suffered greatly from biliary colics. Two years later I removed stones from the gall-bladder and the common duct, with complete relief of all the painful symptoms. The jaundice continued, however, and the enlargement of the spleen, which had been noticed throughout the course of the disease, was unaffected. Some years ~~later I~~ removed the greatly enlarged spleen. The patient recovered promptly, has remained healthy, has married, and is the mother of a family.

The cure of hemolytic icterus by removal of the spleen presents a striking picture of the good results of surgery. In four days the anemic, jaundiced, debilitated patient may have, perhaps for the first time, a clear, white skin. In a few weeks the anemia disappears entirely, and if the patient is young, there is a most extraordinary increase in stature and weight, a development of greater energy, and a buoyant outlook on life. In the forty-nine cases in which the spleen was removed in the Clinic for hemolytic icterus, the operation was difficult in only one, and there have been three operative deaths.

The first patient who died was a young man who, on the morning of the day of operation, was in the beginning of a crisis to which he had been subject every few months, the importance of which was not then realized. The operation was relatively easy and the patient was back in bed in a short time. Suddenly he passed into a condition of delirium, then of coma, and died in forty-eight hours. The second patient was a debilitated woman in the terminal stage of the disease. Post-mortem examination revealed that there had been an infectious process in the upper pole of the spleen, which had resulted in massive adhesions in which lime had been deposited. The operation was very difficult and probably should have been discontinued after exploration. The patient died from exhaustion at the end of seventy-two hours.

### POLYCYTHEMIA RUBRA VERA

The somewhat rare disease, polycythemia rubra vera, was described by Vasquez in 1892, and later brought forcibly to our attention by Osler. I have seen a few well-defined cases of this type. The blood picture is striking, the hemoglobin may be as high as 130, the red cells range from 6,000,000 to 12,000,000 or 14,000,000, and the viscosity of the blood is increased, making the patient appear cyanotic. The spleen is always enlarged, and in the later phases also the liver. Since our knowledge of polycythemia rubra vera comes largely from finding marked changes at postmortem in the liver and other organs as well as in the spleen, it was with some hesitation that I removed the spleen from a young physician, aged twenty-eight years, who had suffered from the disease for several years. For the last two years he had become gradually debilitated, occasionally had severe hemorrhages from the stomach, and finally became unable to work. He recovered uneventfully, and for more than two years has been in active charge of his work. I met him a week ago at a meeting of a medical society and found him in good health. The red cells are about 6,000,000 and the hemoglobin is still higher than normal. This single case does not permit further comment.

### CHRONIC HEMORRHAGIC PURPURA (ESSENTIAL THROMBOPENIA)

A more satisfactory name for hemorrhagic purpura, at least in the more severe forms, would be essential thrombopenia, because the latter indicates a scarcity of blood platelets, which is the most important feature of the disease. Essential thrombopenia should not be confused with the toxic or other purpuras in which the bleeding time is prolonged, but the number of blood platelets is not markedly decreased. This disease is usually seen in the period of adolescence. It is characterized by hemorrhages subcutaneously from the nose, and from the intestinal tract. In the female, menorrhagia may be very profuse. Patients are alternately better and worse, but always show evidence of the disease, which eventually terminates in death. Hitzrot credits Kaznelson with having first performed splenectomy for hemorrhagic purpura, with immediate cure of the patient. Two such patients have been operated on in the Clinic. The first of these patients, operated on eight months ago, a woman aged thirty years, in the terminal stage of the disease, had suffered for two years and had been in bed for six months. Four hours after removal of the spleen, the blood platelets had increased from 40,000 to over 200,000. In two weeks the patient was quite well, and has remained so. The second patient, a young woman aged twenty years, was splenectomized October 27, 1923, with equally striking beneficial results. In this case, the bleeding time before operation was fifty-five minutes; hemorrhage was difficult to control in the external tissues, but the deeper tissues about the spleen did not show the same tendency to bleed.

### PERNICIOUS ANEMIA

The relation of the spleen to pernicious anemia has not been fully determined. In the opinion of those perhaps best qualified to judge, there is no connection between the spleen and pernicious anemia. I shall not review here the characteristics of the disease. The anemia, color index, appearance of the tongue, achylia, paresthesias, and the cord changes are well known. Eppinger was the first to attempt to relate the spleen directly to pernicious anemia. In the postmortem examinations of persons who have died from pernicious anemia the spleen usually is found to be small, perhaps from terminal shrinkage; during life the spleen is often enlarged and may be palpable. There are no changes in the organ characteristic of the disease. As I look back over a series of cases of pernicious anemia in which the spleen was removed, several facts stand out. First, there has been remarkable temporary improvement in all, much greater and more prolonged than after transfusion of blood. Second, 22+ per cent. of the splenectomized patients have lived beyond the life expectancy of patients not splenectomized, with comparable pernicious anemia. Third, a few patients (10+ per cent.) have lived for a number of years, and are able to work. On the other hand, the blood in all splenectomized patients who have been observed still shows characteristics of the disease. Many unsplenectomized patients with pernicious anemia live as long as two years, or perhaps longer. It is evident that pernicious anemia is not always one and the same disease. It is also evident that there is the greatest and most prolonged improvement following splenectomy in cases in which the syndrome is not well established, while in the case of elderly persons with the aplastic type of the disease in the terminal stages, little permanent benefit is derived.

Patients with pernicious anemia should not be splenectomized during a crisis. In the first nineteen splenectomies for pernicious anemia in the Clinic, three patients died from this cause. In forty consecutive splenectomies since, on patients properly prepared by blood transfusion, there have been no deaths. Removal of the spleen for pernicious anemia, in my experience, has been easy and safe, although it is now rarely performed in the Clinic, too rarely perhaps, due to the influence of the general prejudice against it.

### SPLENOMYELOGENOUS LEUKEMIA

Many years ago while I was visiting in Boston, the late Dr. Maurice Richardson presented a patient with splenomyelogenous leukemia, and apologized for having removed the spleen. It was finally decided, I believe, that, because the patient recovered he did not have splenomyelogenous leukemia, but some other obscure disease resembling it. Again, associated with New England, was my first splenectomy for splenomyelogenous leukemia. A New England school teacher had taken up a little dry farm in western Kansas, and taught the neighboring rural school. Splenomyelogenous leukemia was well established when she came to me for consultation. I told her the little I knew concerning the condition, and she said, "Yes, I know that too, for I have been reading up on it. But what I cannot get away from is that whenever any kind of treatment reduced the size of my spleen, my general health has been greatly improved. I should like to have my spleen removed." I too had noticed this phenomenon. In spite of a healthy skepticism of the prospective result I removed the spleen in this case. The patient did not die. Her white cell count dropped from over 300,000 to about 40,000. She lived for two and one-half years, and died from some intercurrent disease. The blood changes of leukemia had remained evident, but greatly modified. As we were at that time just beginning the therapeutic use of radium and x-ray, this case was of special significance. Because of the extraordinary effect of radiotherapy in the reduction of the spleen of patients suffering from splenomyelogenous leukemia, we began using radium in all such cases, and, in selected cases performed splenectomy. Under such circumstances the procedure is easy and safe. In thirty cases in which operation was performed, we have had but one death, and this was from pulmonary embolism in the second week, when the patient was up and around. A few of the patients are so free from evidence of the disease that we have doubted the accuracy of our diagnoses. Other patients are greatly relieved and have had, on the whole, sufficient prolongation of comfortable existence to make the operation worth while, if done early in the course of the disease, and in the more chronic types.

### SPLENIC ANEMIA

Living bacteria have not been demonstrated in the spleen in any of our cases of splenic anemia. The statement that the disease is due to some type of short-lived organism is purely theoretical, yet these cases have many features suggesting such origin. Postmortem as well as operative findings indicate that the spleen has reacted violently to some form of chronic irritant. It is extremely adherent, filled with connective tissue and generalized fibrosis, with thrombophlebitis of the vessels and atrophy of the pulp cells. Marked anemia is produced by the destructive action of the enlarged spleen on the red cells. The symptoms and progress of splenic anemia are often intermittent. Quiescent periods may last for months or even years with the patient healthy, but the disease eventually leads to death. In a considerable percentage of late cases, coincident cirrhosis of the liver, of the portal type described by Banti, has been found. One of the most serious complications of splenic anemia is gastric hemorrhage, the patient succumbing to this complication, or to the anemia which results from it. Such hemorrhages greatly resemble those of other origin associated with the portal cirrhosis of the liver. Instead of supposed rupture of varices, which has long held the stage as the cause of this type of gastric hemorrhage, perhaps changed function of the liver accounts for many of the hemorrhages that occur from splenic anemia, as well as those that sometimes occur without demonstrable cause. Such hemorrhages, unfortunately, are not always permanently relieved by splenectomy. Ten patients of the ninety-three on whom we performed splenectomy for this condition had hemorrhages, from two to six years later, and eventually died, either from the hemorrhages or from coincident diseases, of which the hemorrhages were a notable symptom. In these ninety-three cases there were ten deaths in the hospital, but not all the deaths were directly associated with the operation, as many of the patients were in the terminal stage of the disease, with ascites, edema of the lower extremities, and advanced cirrhosis of the liver. They died some time after recovery from the operation. The death rate depends more on the character of the cases accepted for operation than on the technical features of the operation, yet the extraordinary cures that follow removal of the spleen, even in the very advanced cases of splenic anemia, make splenectomy the method of choice, if not the only method of treatment. When one sees patients with advanced cirrhosis of the liver, ascites and hemorrhages from the stomach, recover following splenectomy, and remain in excellent health for years, the liver regenerating sufficiently to care for the reduced circulation, one cannot justifiably refuse to operate, even in the advanced cases that give the high mortality. As the spleen is always very adherent in these late cases, the operation is trying and formidable.

### SPLENOMEGALIAS DUE TO MICROÖRGANISMS

In general, it may be said that there are no drugs that will destroy bacteria in the body that are not more harmful to the organism than to the bacteria, in this respect differing greatly from blood-borne protozoa, such as the microorganisms which cause malaria and syphilis. However, recent experiments have shown the possibilities of specific remedies for certain types of bacteria. Usually, when bacteria enter the system, their destruction depends on antibodies produced by the body itself, and the development of natural immunizing processes. Vaughan points out that patients with typhoid fever have the typhoid bacillus in full action during the prodromal period, what is commonly called "typhoid fever" being the reaction of the patient to the bacterial assault. It is even possible that one of the functions of the tonsils and similar organs is to admit certain numbers of bacteria to the blood stream early, to start immunizing processes. From various sources bacteria continually are entering the body, and the spleen is one of the organs which filters them out of the blood stream and sends them to the liver for destruction.

### PYOGENIC INFECTIONS

Fifteen of the splenomegalias were due to acute or subacute bacterial infections involving the spleen, all occurring as residue of acute pathogenic infections, tonsillitis, osteomyelitis, and various other easily recognizable causes. In the series there were five deaths from splenectomy, and only six of the patients were cured. None of the patients with septic endocarditis was cured or greatly relieved. In our experience it has been difficult to trace chronic splenomegalias directly to typhoid fever, although in a few instances we have seen typical acute typhoid abscesses in the spleen resulting from typhoid fever.

### PRIMARY TUBERCULOSIS OF THE SPLEEN

Tuberculous splenomegalia is one of the best known of this bacterial group, in which the process may be limited to the spleen. The spleen was removed in the Clinic in six cases of this type, with one death in the hospital. One patient died about two months after the operation, from general miliary tuberculosis, spread, I believe, by infection carried into the blood by faulty operative technic. There had been some soiling with tuberculous material at the time of operation, and the pedicle of the spleen had been transfixed with a needle when the ligature was applied. On the whole, the results of splenectomy for tuberculosis have been excellent. So far as I know, all the patients but one are alive, one more than seven years following operation.

### SPLENOMEGALIAS DUE TO PROTOZOAL DISEASE

Of the splenomegalias due to protozoal disease, those caused by the spirochete pallida, and the plasmodium of malaria are the most common in the temperate zones, while in the tropics bilharziasis and kala azar are common.

A greatly enlarged spleen has been removed in the Clinic in nine cases of chronic syphilis, in all of which the patients had been treated thoroughly without success, and were in the terminal stages of the disease. In each case removal of the spleen, in which were found spirochetes and small gummas, immediately relieved the patient. Within two weeks the enlarged gummatous liver had shrunk to normal size and position, the Wassermann reaction soon became negative with little further treatment, and the anemia promptly disappeared.

No cases of splenomegalia from malaria requiring splenectomy have been seen in the Clinic. The modern quinine treatment of the plasmodium of malaria is so efficient as to be a true specific.

In addition to the 267 cases to which I have referred, the spleen was removed at the Clinic in fifty-nine cases which merit special consideration at some future time, because they represent unusual pathological and clinical conditions.

All in all, the evidence at hand goes to show that there is a potentiality for harm in the chronically enlarged spleen, and if the enlargement does not yield within a reasonable length of time to suitable medical treatment the spleen should be removed if it can be done safely.

In conclusion, I would express my appreciation of the work of my colleagues, Dr. H. Z. Giffin, and his co-workers for their assistance in establishing the facts connected with the diagnosis and preoperative findings, and the study of the cases following operation.

### SUMMARY

The function of the spleen concerns the blood and is closely associated with the liver.

The spleen is chiefly a mechanical filter, which removes from the blood degenerated red cells and toxic agents above colloid size, such as microörganisms and débris, on which it acts be-

fore sending them to the liver for further detoxication and elaboration; it also develops lymphocytes.

While the function of the normal spleen is not important, the diseased spleen is a serious menace to the constituents of the blood and to the liver.

The spleen apparently does not initiate the pathologic processes with which it is concerned, but acts as a secondary agent.

Removal of the spleen in the splenomegalias and in certain blood states removes a pathologic agent, or breaks up a vicious circle.

In the estimation of the benefit to be derived from the removal of the spleen, the entire syndrome of which it is a part must be considered.

A chronically enlarged spleen which does not yield to reasonable medical treatment should be removed early, unless, in the individual case, there are contraindications.

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## GENERAL PRINCIPLES INVOLVED IN THE PROSTATIC PROBLEM*

BY JOHN H. CUNNINGHAM, M.D., BOSTON

PROSTATIC obstruction, in one form or another, is a common disease; about half of the male individuals attaining the age of sixty having some change in the gland, and about one-half of these having symptoms in consequence.

As such patients usually first come under the care of the general practitioner, I wish, on this occasion, to attempt to give a survey of the general principles involved in the prostatic problem, and to endeavor to convey, as simply as possible, the knowledge of the subject which I feel that the general profession should possess.

The prostatic problem is one which, like many other subjects in surgery, owes its recent important advances to biochemical studies, and the general principles evolved from biochemical investigation.

Details of surgical technique in the various prostatic operations have long been appreciated, and, as in thyroid operations, have required but surgical skill to be satisfactorily executed. The period of development of modern surgical technique in connection with prostatic operations, has been of fascinating interest, and so absorbing that it only remained for its perfection to cause the realization that technical operative skill was not sufficient, and that underlying and fundamentally important factors must be appreciated, their influence estimated, and controlled, that the benefits of surgical skill might serve its best purpose.

It is without question that the future advances in prostatic surgery, as in other specialized branches, are to be based upon an understanding of vital forces, and the means for their correction when need be, in so far as possible, combined with technical surgical skill. The surgeon, therefore, who today relies on surgical skill alone in the group of cases suffering from biochemical derangements is out of date, and those who realize the importance of availing themselves of the information to be obtained from the investigators who can furnish the fundamental knowledge of the patient's general condition, and data in regard to the special features required to be known, are to be rewarded with increasing success.

In view of our present knowledge of the requirements for determining a prostatic patient fit or unfit for surgical treatment, every patient with prostatic obstruction should be given the advantages of most careful clinical and laboratory study to determine the best course to pursue.

Prostatic enlargement producing obstruction resulting in partial or complete obstruction to the outflow of urine from the bladder presents a condition differing in many respects from most surgical problems, chiefly for two reasons. First, prostatic obstruction, either benign or malignant, occurs, with rare exceptions, with advanced age; in fact, it is the most common malady in the male of advanced years requiring surgical intervention; and the second, the character of the obstruction varies greatly, which makes necessary entirely different operative technique, according to the particular form of obstruction.

Were it not for the fact that the individual with prostatic obstruction is in the period of physical decline, we would only have to consider the type of obstruction and choose the suitable method for its relief, but such is not the case. The surgical indications may be evident, yet to execute them without accurately determining the patient's general condition and subjecting him to preliminary treatment before removing the gland, is unjustifiable in the present light of our knowledge.

When I first became interested in the subject of prostatic obstruction, over twenty years ago, circulatory, respiratory, and renal changes, now considered an important part of the whole picture, were generally disregarded, and only the operative indications engaged attention, with the result that the gravity of the operation was always apprehended, the convalescence always expected to be stormy, and if recovery took place, the patient happened to be one of those fortunate individuals who had not much impairment of the important systems just alluded to, and possessed the necessary reserve to carry the burden, which we now consider unjustifiable to impose upon the prostatic patient.

In order to give an impression of the average condition of the prostatic patient, I have looked over our last one hundred cases which have been operated upon. It is found that the age has varied from 44 years, the youngest, to 84 years, the oldest, and the average age is in the period between 60 and 70 years. There have been discovered associated defects, as follows: Renal, over 90 per cent.; circulatory, over 70 per cent.; respiratory, over 20 per cent.; nerve system changes, over 30 per cent.

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*Read before the combined meeting of the Kansas City Clinical Society and The Medical Associations of the Southwest, Kansas City, Oct. 11, 1923.

It is evident that renal and cardiac defects are frequent, and the resulting cardio-renal complex is the commonest and most serious condition associated with prostatic obstruction, and is, moreover, the condition which produces the most dangerous factor in connection with the prostatic problem.

The most important feature of pre-operative study is, therefore, to determine the condition of the kidneys and circulatory system. Attention to the prostate is primarily to establish the fact that the prostate is obstructive to the complete emptying of the bladder, and the determination of an existing residual urine, due to this cause. The obstructive prostate is, moreover, to be considered but the primary cause of degenerative secondary changes in the kidneys and circulatory system. These degenerative changes must be recognized and rectified, in so far as possible, before operative procedures can justly be considered. The pre-operative study, aside from a comprehensive appreciation of the patient's general condition, is, in consequence, directed chiefly to the kidneys, which in all prostatic patients must be expected to suffer from urinary back pressure and infection.

Dependent upon these features, the renal impairment will depend, in large measure, upon the degree of urinary back pressure in the ureters; producing dilatation, not only of the ureter, but of the kidney pelvis and calices, and a thinning of the renal cortex, whereby the secretory power of the kidney is diminished.

Infection superimposed upon these mechanical degenerative changes further diminishes the kidney's efficiency in the process of elimination. The impairment of renal function will depend upon the amount of destruction of kidney tissue due to urinary back pressure and infection within them, and varies, as a rule, with the amount of the residual urine and its character, whether sterile or infected.

Dependent upon this pathology there results an inability of the kidney to eliminate in a normal manner, and the heart, in consequence, has an increased burden placed upon it; a definite cardio-renal complex occurs; a degree of toxemia develops insidiously, because of faulty kidney elimination, and a state of chronic toxemia, often referred to as uremia, is an inevitable consequence.

Clinical evidence of this condition is determined by an estimation of the 24-hour amount of urine secreted, urinalysis, renal function tests, and evidences of the retention of nitrogen products by blood chemistry, together with the estimation of the cardiac condition by the usual means of examination, with special reference to myocardial changes. It is the toxemia, dependent upon the inability of the kidney to eliminate the products from the blood, which it is supposed to do, that produces the toxic condition which is so necessary to be determined by the various tests alluded to before we can have a proper understanding of the patient's renal and cardiac efficiency.

In the olden days our deaths from prostatectomy, with rare exception, occurred mostly from uremia, occasionally from sepsis, and rarely from hemorrhage. The mortality today depends upon the same factors, but we have, by improved operative technique, largely overcome the dangers from hemorrhage, and having come to the realization that much may be accomplished by pre-operative preparation in overcoming uremia and sepsis, so that today more patients may be safely subjected to operation, and the mortality has changed from about thirty per cent. twenty years ago, to about 5 per cent. today.

There has developed, through pre-operative study and preparation, a rather definite standard of physical requirements, estimated largely by tests to determine the renal activity in its different phases, and the estimation of the general metabolism by blood chemistry and cardiac investigations. Treatment prior to operation now brings the majority of prostatic patients up to the requirements for safe surgical intervention, and today apprehension regarding the operation is not the rule; the convalescence is relatively easy, and the mortality surprisingly low. If the required standard cannot be attained by pre-operative treatment, some less severe measure than a radical operation is indicated, and may be undertaken to relieve the distressing symptoms of retention, but without the idea of cure.

It must always be inferred that patients with obstruction of the prostate, producing a residual urine, have impairment of kidney function until proven otherwise, for defective kidneys are responsible for the great majority of deaths following prostatic operations. In the prostatic problem it is the kidneys which demand the strictest attention prior to and following the operation, and it has been the recognition of this fact, and the employment of proper treatment to improve renal and cardiac efficiency, and overcome the associated toxemia, that has been responsible, more than anything, for the advance in prostatic surgery.

The degree of impairment of kidney function is determined by: complete urinalysis, particularly with reference to the matter of urea elimination; the specific gravity, the reaction and renal elements in the sediment; the 24-hour output, which must be at least 50 ounces; the phenosulphonephthalein test, which must have 40 per cent. as a minimum amount eliminated in two hours, and remain constant at or above this point; blood urea tests, which should show a maximum of 30 mg. per 100 cubic centimeters of blood; a systolic blood pressure under 200, and a diastolic pressure within proportionate limits; no febrile state dependent upon renal or bladder infection, or upon other more remote causes. These tests I believe may be considered the minimum requirements in judging the safety of a radical operation, interpreted, of course, in the light of the patient's general condition in other respects.

In the period of pre-operative study and preparation, attention is directed to establishing the maximum efficiency of the kidneys, fortifying the patient against the infection incident to the operation, and to attain the best general health possible. This is brought about chiefly by relieving kidney back pressure and infection by establishing constant bladder drainage, either by a catheter retained in the bladder through the urethra when possible, or by suprapubic cystotomy when necessary, and retained sufficiently long to bring about the requirements previously stated.

Bladder drainage is the first important feature of pre-operative treatment, and is the means to the end of permitting the forcing of fluids, and an estimation of the recuperative power of the individual. If a catheter can be passed to the bladder through the urethra and secured there, nothing more in the way of drainage can be desired in most instances; and this form of bladder drainage has all the advantages and none of the disadvantages of a suprapubic cystotomy established for drainage. Constant drainage having been established, either *per urethra* or suprapubically, the patient is, to all intent and purpose, relieved of his suffering and can recover lost sleep, of which most are in need; fluids may be forced and the bladder irrigated. Phthalein tests and urinalysis can be repeated; the 24-hour amount of fluid intake and urine output recorded; the blood chemistry studied, and a knowledge of the renal improvements thus obtained. Upon the recuperative power, as evidenced by the general condition and the results of the special examinations, will depend the ability of the individual to stand the strain of operation.

Following the establishment of bladder drainage, either by a catheter *à demeure,* or by a suprapubic cystotomy, there follows a period of renal depression expressed by a drop in the 24-hour amount of urine, with a gradual rise in its specific gravity; the phenosulphonephthalein output is diminished; and there is an accumulation in the blood nitrogen retention, with an increase in the albumen present in the urine. This stage of depression is also evident in the general condition of the patient, as shown by a sharp drop in the blood pressure, general ill being, and toxic appearance, if the kidneys are much diseased. It is the danger period, through which the patient must pass successfully before a more or less stable equilibrium is attained. This definite period of physical inhibition explains most of the deaths occurring within the first four or five days when prostatectomy has been performed, without previously producing renal adjustment by drainage.

Following the few days of depression dependent upon bladder drainage, as evidenced by the clinical picture and laboratory tests alluded to, there is a gradual improvement in all respects, which finally becomes more or less constant, but naturally varies with different patients, according to the degree of impairment of other bodily tissue as well as the renal tissue. During this period of depression digitalization may be of the greatest value in supporting the heart; the employment of caffein as a circulatory and renal stimulant may also be helpful, and paramount is the lessening of toxemia by saturating the body with fluids. At least three quarts of water must be taken daily by mouth, if the stomach will permit, or if not, by rectal drip, subcutaneously, or intravenously, in order to overcome the toxic state.

The principles of treatment directed toward lessening this toxemia, which may be present in all forms of renal disease, by supporting the heart, stimulating the kidneys, and lessening the toxemia by improving the kidneys' ability to secrete, chiefly by saturating the body with water, is an outstanding contribution of the urologist to medicine, and is the means to the end of bringing the prostatic patient up to his best possible physical standard.

To attain this state of individual equilibrium may require only ten to twenty days, yet we have had many patients drained by a suprapubic tube for months before they arrived at the standard of requirement for prostatectomy, and some never attain the necessary standard. On the whole, I have been greatly impressed in observing patients drop so low in the period of depression previous to, and often dependent upon bladder drainage, that they are distinctly uremic, and even unconscious, but eventually successfully pass through the period of renal depression. Sometimes it is only after months of drainage, forced fluids and proper cardiac support and renal stimulation that they fulfill the requirements necessary for a safe radical operation.

It is not my intent to give the impression that most patients pass into such an extreme state of depression following bladder drainage; most do not, those that do usually die; but occasionally one is surprised by an unexpected recovery, by attention to details already outlined.

Emphasis has been placed upon this stage of depression dependent upon bladder drainage prior to removing the gland, because it must be successfully passed if the radical operation is to be made safe, and because it explains the high mortality of days past, when we did not appreciate the significance of deaths in prostatectomy following within a few days. It is the appreciation of the importance and the practice of employing preliminary bladder drainage, and the lessening of toxemia by forced fluids and supporting the heart by careful digitalization, and the kidneys by appropriate stimulation, as a pre-operative step to prostatectomy, which has been the real factor in lowering the mortality of prostatic operations.

Further, I have dwelt upon the feature of pre-operative preparation and study because I believe the general principles involved are not generally understood or appreciated by the general profession. It is still not infrequent that the doctor making a diagnosis of prostatic obstruction, expects the surgeon to come to the hospital most convenient for him, do the operation immediately, and leave him in charge of the after-care, as has been so long the custom in most surgical maladies. Whatever may be said about this practice in general, I am convinced that such practice is not to be considered in prostatic surgery. The prostatic patient requires all the various tests and careful preparation already referred to. These cannot be carried out except by those particularly interested and qualified to correctly interpret the clinical and laboratory findings. There is probably no group of surgical patients who require so much attention to details, pre-operative and post-operative, as does the prostatic patient.

Leaving the subject of the general systemic condition of the prostatic patient and what should be done to bring about the required improvement to make operation safe, and now considering the physical character of prostatic obstruction, it is found to vary greatly. It may be malignant or benign, it may be intra-urethral or intra-vesical obstruction; a simple prostatic bar, or sclerotic contracture of the vesical neck; or the obstructing gland, instead of being of the large, hypertrophy type, may be small and fibrous. Any of these quite different forms of prostatic obstruction give the symptom-complex of prostatism, and a determination of the type of obstruction present in any individual patient depends upon the local examination.

Elderly gentlemen, with a gradually increasing frequency of urination, especially at night, and difficulty with the stream, should excite a suspicion of prostatic obstruction of some form, with a resulting residual urine, and lead to an investigation of the prostate by rectal palpation, and examination of the bladder by a catheter to determine the presence or absence of residual urine.

The investigation by the catheter is by far the more important feature in establishing the diagnosis, because if the catheter meets obstruction in the prostatic urethra, and a residual urine is discovered, the diagnosis of some form of prostatic obstruction is clear. Investigation of the prostate by rectum, alone, may give a very false impression, unless the gland is much enlarged, and even then without determining the amount of residual urine, the degree of obstruction from the enlarged gland is not known.

Every obstructing prostate is not enlarged, and quite as much obstruction may exist in a gland, which by rectal examination feels little if any enlarged, because of localized obstruction in the prostatic urethra, a prostatic bar or vesical-neck sclerosis; and if obstruction is due to the small fibrous prostate, rectal examination, showing the gland not to be enlarged, is often misleading; so that prostatic obstruction cannot be determined by rectal examination alone, which further emphasizes the primary necessity of employing a catheter in the examination.

Cystoscopy is an important aid in establishing the type of obstruction and in furnishing information in regard to these points. It also makes possible the determination as to whether or not associated bladder calculi or diverticuli are present, both of which are not uncommon; and much may be learned in regard to the condition of the bladder musculature and mucosa, which features are important to know prior to operation. Cystoscopy is not, however, always possible on account of the inability to pass the instrument by the obstruction, but this examination should be considered routine. When this examination is impossible, and operation is to be undertaken, the suprapubic approach gives more information regarding the bladder condition than the perineal route, and is the best procedure by which to deal with associated complications, such as calculi and diverticuli, which may not be determined prior to operation in the small group in whom cystoscopy is impossible.

There are many different operations employed for the relief of prostatic obstruction. No one operation is suitable for all cases, not only because the nature of the obstruction varies greatly, but because of a variation in the patient's general condition.

If the patient's general condition is below the standard required for a radical removal of the gland, some less severe method of relief of the bladder retention must be considered. If the obstruction is chiefly intra-urethral and benign in character, the galvano-cautery operation of Bottini, done under local anesthesia, may offer much in giving a freer outlet by destroying a portion of the obstructive gland.

Prostatics, in whom the obstruction is due to a bar at the vesical neck, or sclerosis of the vesical sphincter, whether or not the general condition would permit of a prostatectomy, had best be subjected to a procedure which may be carried out under local anesthesia, if necessary, whereby with one of the many special instruments the obstructing portion of the gland may be cut or burned away, or the sclerotic vesical orifice contracture divided.

Patients with a benign or a malignant gland, who are unfit to stand a radical operation, and who do not possess the type of gland suitable for the palliative operations referred to, and for whom regular catheterization cannot be carried out, either because of the obstructive nature of the gland, or because of their mentality, or social status, may have to submit to the establishment of a permanent suprapubic drainage. Fortunately this class is small, yet the procedure gives much comfort to the remaining existence of the unfortunate individual. By the employment of a device to keep the patient dry, and with bladder irrigations that the unskilled can carry out, and occasional removal and cleaning of the drainage tube, these patients are relieved of a most distressing condition. In fact, the patient with a permanent suprapubic tube is relieved of his retention, and the destructive secondary kidney changes dependent upon it improve, quite as much as were the gland removed. He has, however, the inconvenience and care of the tube.

In regard to the radical operations, here also no one operation is suitable for all cases. Circumstances associated with the individual case should have much influence on the choice of the operation.

The discussion as to whether a large, adenomatous gland should be removed by the suprapubic or perineal route, will in my opinion, depend primarily upon a clear understanding of how much of a physical tax the individual patient may be subjected to with safety; yet if the obstructing gland is malignant or of the small fibrous variety, it should be attacked through the perineal route without question.

Suprapubic prostatectomy, either by the one- or two-stage technique, carries a higher mortality than the perineal operations, either by the dissecting or median urethral enucleation methods. The actual advantage of the suprapubic over the perineal route is that a relatively more satisfactory result may be expected.

The whole subject of the choice of the suprapubic or perineal operations may be summarized, I believe, in the fact that suprapubic prostatectomy carries a relatively higher mortality with a better average functional result. These facts should lead to subjecting only the best risks to the suprapubic operation. Those not coming up to the general physical standard required for suprapubic prostatectomy, as evidenced by the renal function tests, blood chemistry, and general features already considered, may often be subjected, with safety, to a perineal operation.

In the perineal operation there is also a choice, for the dissecting operations are attended with a slightly higher mortality than the simple intraurethral enucleation of the gland, yet here, also, a better functional result may be expected, because certain of the dissecting operations leave the compressor-urethrae muscle intact. The median perineal intra-urethral enucleation of the gland is the simplest method of prostatectomy and is attended with the lowest mortality. It has always carried the chances of a relatively poor functional result; yet there is no operation for removal of the gland that has been performed so badly by most that have occasionally undertaken it.

If the gland is proven to be of the small fibrous type, the perineal dissecting operation is the procedure of choice, even if the patient's condition is of the best, for the amount of prostatic tissue is small in amount and intimately bound to the capsule surrounding the gland, and may be most difficult to remove.

If a suspicion exists, prior to operation, that the obstructing gland is carcinomatous in character, because of the symptom of sciatic pain, associated with the subjective symptoms of prostatism, and the rectal examination gives a sense of marked induration with hard, irregular areas, and induration in the prostate extends upward into the region of the seminal vesicles, and the tissue posterior to the prostatic urethra is much increased, another problem presents itself. If obstruction exists to any marked degree, and the patient's general condition is such as to permit of operation, the malignant obstruction should, in my opinion, be removed surgically through the perineum. Not infrequently benign hypertrophy and malignant disease occur together, in which event the obstruction may be due largely, if not entirely, to the benign growth, and the obstruction may be relieved by simply removing the hypertrophied lobes without attempting to remove the malignancy.

In either event, prior to the operation, the gland should receive active radium treatment to lessen the vitality of the malignant cells, because during the operation the malignant mass is usually broken into, and by so doing blood spaces are opened and form avenues for dissemination of the disease. At the time the gland is removed, radium should be left in the prostate region for at least 500 millicurie hours, to exert a destructive influence on the remaining tissue; for it is well recognized that all the malignant tissue is most difficult to remove surgically, and it must be expected that some will be left. Following the operative recovery, radium and deep x-ray therapy should be thoroughly employed, to give every chance of completely eliminating the disease locally, because recurrence of the growth following operation producing obstruction again is prone to occur.

There is a group of patients with malignant obstructive prostates, who, following the usual course of general and local examinations, will be found to have metastases in varying degree, and so defective in general condition that no operative procedure can be considered. These patients, and those who have recurrence of the disease locally, after operation, may be benefited by radium therapy, combined with regular catheterization, bladder lavage and sedatives, chiefly in relieving local discomfort and general pain, but not with the idea of cure. Moreover, the employment of radium therapy in this group becomes a "mental crutch," which is most helpful in carrying them on to the end, without the feeling that they are hopeless beyond any medical interest or aid.

Study, therefore, to determine the type of gland producing the obstruction will, together with the patient's general condition, determine the proper procedure to employ for its relief. It is certain that there is no one operation suitable for all the different forms of prostatic obstruction.

The popularization of the so-called two-stage technique for prostatic obstruction in recent years has misled many into believing that all forms of prostatic obstruction can be satisfactorily dealt with by this procedure. Particularly has this applied to the general surgeon, unfamiliar with the use of the cystoscope and without the necessary laboratory facilities for pre-operative study. Cystotomy is a simple, relatively non-technical operation, with which he is familiar, and because, further, the patients, following the establishment of bladder drainage, are improved in their renal and circulatory system; and dependent upon this there is a lower mortality than when the operator, inexperienced with perineal prostatectomy or the more technical procedure of intra-urethral operation with special instruments, attempts perineal prostatectomy, or the more special operations without any preliminary preparation of the patient, by securing bladder drainage and the improvements in bladder and renal retention and infection.

By securing suprapubic bladder drainage, with the resulting renal improvement, in the hand of those not especially instructed in the prostatic problem, the two-stage technique has had a distinct educational value in showing what bladder drainage will do in lessening the mortality, and is, in consequence, naturally appealing to this group of surgeons. The two-stage technique, on the whole, may be considered the best technique to be employed where the proper facilities for study and preparation are not to be had, and the operator is not experienced in the more technical operative methods.

That this technique is the best to be applied to all forms of prostatic obstruction is fallacious, and those who have erred in this belief have simply to review the difficulties encountered in removing the small fibrous sclerotic gland, or those the site of malignant disease, to say nothing of the poor functional results and needless deaths where this technique has been employed for relief of obstruction at the vesical neck due to a prostatic bar or sclerosis of the vesical sphincter.

Personally I feel that bladder drainage *per se* should be secured by an indwelling catheter when possible, and by suprapubic cystotomy only when necessary. I agree with Young, Squier, Judd, and those who believe that bladder drainage secured by the urethra when possible is more desirable than by a suprapubic cystotomy. It imposes a less severe burden at a time when all energy should be conserved; bladder drainage is quite as satisfactory, and if the suprapubic operation is chosen later, it is easier of accomplishment through the primary suprapubic incision than through a fistula established by a preliminary suprapubic sinus. If catheter drainage cannot be secured *à demeure*, suprapubic drainage is imperative for a sufficient period of time to produce the systemic adjustment prior to the removal of the gland.

The indications for suprapubic cystotomy as a preliminary step to prostatectomy are, in my opinion, (1) when urethral drainage cannot be accomplished because the bladder cannot be readily entered through the urethra; (2) the indwelling catheter is not well tolerated; (3) when it is realized that bladder drainage will be necessary over a period of many weeks or permanently, because of the patient's poor general condition; (4) when infection in the bladder is severe, with or without bladder calculi or diverticuli or associated tumors; (5) when active, non-suppurating infection is present in the already obstructive prostate, or there is an acute epididymitis.

If suprapubic cystotomy as a preliminary step to secure drainage is not necessary for the above reasons, there is much argument against employing it as a preliminary step, chiefly for the reason that suprapubic drainage opens up spaces for absorption of infected urine, and the suprapubic drainage requires considerable attention at a time when the patient's reserve should be guarded, and not taxed any more than is absolutely necessary; moreover, if suprapubic drainage is required for more than a few weeks before the renal and cardiac adjustment can be attained, the suprapubic enucleation of the gland is far more difficult because of the scar tissue about the sinus than if a suprapubic removal of the gland is undertaken through a primary incision, and accidental opening of the peritoneal cavity is far more common. Further, the final stage of renal and cardiac improvement may not show a satisfactory general condition to make suprapubic prostatectomy the operation of choice; or if the obstruction is due to a prostatic bar, sclerosis of the vesical neck, or the disease is malignant, or the gland is of the small fibrous variety, the suprapubic route is not the one of choice in dealing with the obstruction.

To summarize this brief résumé of the general principles involved in the prostatic problem, I wish to convey the idea that the sequence of pathological events dependent upon prostatic obstruction are primarily mechanical, and secondarily due to infection; that back pressure in the kidneys with impairment of their function and the consequent cardio-renal complex with toxemia, is the most important and dangerous feature of the malady; and that it is this impairment of kidney function due to retention and infection, with the resulting cardiac embarrassment and toxemia, that is the common cause of death in the prostatic patient.

I wish to emphasize the fact that bladder drainage, whereby urinary back pressure is relieved and infection lessened, cardiac and renal stimulation and saturating the body with water will result in a varying degree of kidney and consequently general improvement; that there are certain special tests which should be employed to estimate the physical status, both general and local, and that it is unjustifiable to subject an individual to any operative procedure except suprapubic drainage, to relieve retention, without first gaining the important knowledge and physical improvement which may be attained by pre-operative study and treatment. Such investigations determine the patient fit or unfit for radical surgical relief, and it is not the condition of the prostate so much as the condition of the kidneys and the patient's general condition which determines this point.

In regard to the operative treatment, no one operation is suitable for all patients, and the choice of operation depends upon two features: one, the patient's general physical condition, and, second, the character of the obstruction.

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# OBSTRUCTIONS OF THE POSTERIOR URETHRA BY CONGENITAL VALVES. REPORT OF A CASE

BY G. H. HANSMANN, M.D.

[From the Department of Pathology, Harvard Medical School]

Congenital obstruction of the posterior urethra by anomalies is rare and, therefore, interesting and of importance because it can be treated surgically. In order that cases may become recognized and properly treated, it is advisable to record each one and to illustrate its pathology.

Case Report—Infants' Hospital. No. 10593. Admitted June 5, 1923; died June 10, 1923.

*Entrance Complaint:* Projectile vomiting and loss of weight.

*Personal History:* Patient is a male child. One older brother is living and well.

*Past History:* He weighed seven pounds at birth. He maintained this weight until two weeks ago when he began to lose weight. He had projectile vomiting the first two weeks but this ceased for a period of two weeks.

*Present Illness:* Began at the age of one month, when he was taken suddenly with projectile vomiting immediately after feedings. He has vomited every day since. The frequency has varied from once daily to after each feeding. Since this persistent vomiting began, the child has lost weight. There has been no fever. Stools have been normal, with two or three bowel movements daily.

*Physical Examination:* Temperature and respiration were 99° and 22 per minute, respectively. The patient was a normally developed and poorly nourished male infant that cried continuously. He weighed six pounds. His physical findings were limited to the abdomen, where a mass which did not feel like a distended bladder, but conformed to it in position, was felt. It was smooth, firm, round and immovable. In the right upper quadrant there was a mass that felt somewhat like a kidney. The left kidney was palpable. The liver extended 3 cm. below the costal margin.

*Laboratory Findings:* Blood—Hemoglobin 90%, r. b. c. 3,290,000, w. b. c. 18,700. Urine—110 c.c., pale yellow, 1010; albumin, microscopic amorphous material, a few w. b. c.

*Developments:* June 6, 1923, patient passed 2 c.c. of urine spontaneously. Patient was catheterized and 110 c.c. of urine obtained. After this catheterization the mass above the symphysis disappeared. June 7, 1923: Temperature rose to 103°, where it remained until June 9, when it fell to 96.8°. There was no increase in respiratory rate.

*Abstract of Autopsy:* The body was that of a normally developed but poorly nourished male infant weighing six pounds. The viscera were entirely negative except for the genito-urinary organs.

On opening the peritoneal cavity it was at once noted that there was a large mass in the region of the right kidney and a smaller mass in the region of the left kidney. Both ureters were markedly dilated and folded on themselves, as shown in the photograph. The bladder extended above the symphysis and was globular in appearance. On palpation, it was found that its wall was very thick and that it contained about 60 c.c. of urine under tension. The perirenal and perivesicular tissues were indurated as if involved in a chronic inflammatory process.

Because of the inability to cause urine to flow from the penis by pressing upon the bladder, it was decided that the obstruction was between the bladder and external meatus. Therefore, the entire urinary tract was removed intact. The bladder was tremendously thickened and when incised the urine spurted for a distance of three feet. Inspection of the interior of the bladder showed in the region of the internal sphincter a funnel-shaped cavity occupying the place of the prostatic urethra. The mucosa of the bladder was roughened, granular and red. A catheter, inserted into the penile urethra, emerged from the membranous urethra between two folds. The folds arose from the verumontanum and met at the ventral portion of the membranous urethra.

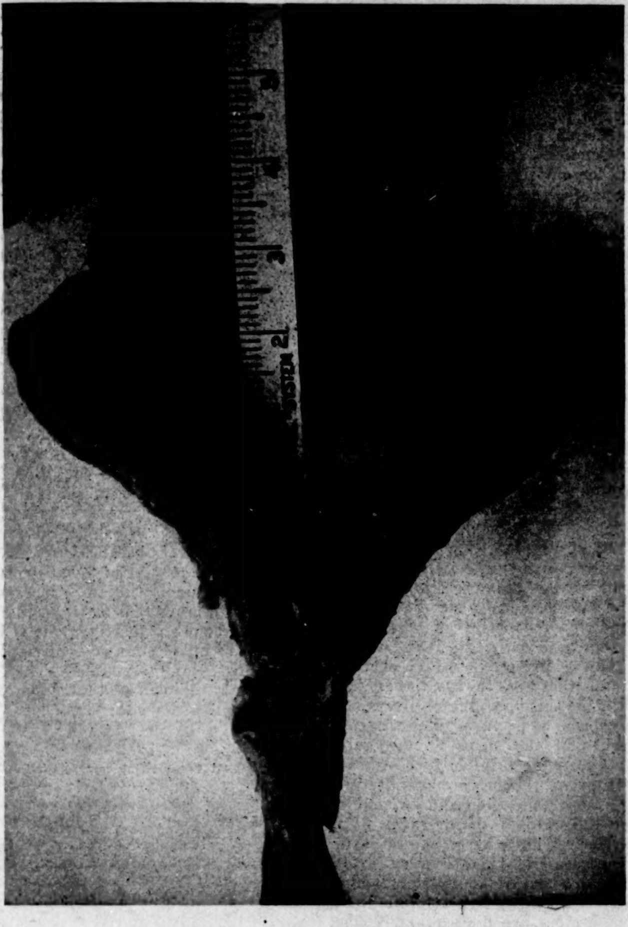
In view of the accompanying photograph, a further description seems unnecessary, as it illustrates the gross pathology better than any description can.

*Histological Findings:* Sections taken from the kidney show extensive destruction of the kidney by infection. There are numerous abscesses. There is only an occasional glomerulus and a few remnants of tubules left.

The bladder is markedly hypertrophied, and there is a marked cystitis with foci of hemorrhage beneath the mucosa.

The seminal vesicles are normal.

Sections taken from various levels of the prostatic urethra show fibrous strands in which a few glands are imbedded, leading both ways from the verumontanum. They are covered by urethral epithelium. There is a marked pyogenic reaction present. The sections, however, are no more illuminating than the gross anatomy.



Photograph of Bladder and Prostatic Urethra × 1.5, showing the valvular obstruction, dilated prostatic urethra, prominent verumontanum, hypertrophied and inflamed bladder, large interureteral ridge, depth of trench back of this ridge and dilated ureters.

## COMMENT

Young, Fronz, and Baldwin[1] in 1919 collected the cases of congenital obstruction of the posterior urethra. They found twelve unreported cases in the records of the Johns Hopkins Hospital and gathered twenty-four cases from the literature. The cases from the literature date back to a case reported by Budd in 1840. The earliest mention of the condition is by Lagenbeck in 1802.

Young, Fronz and Baldwin divided obstructions due to congenital valves of the posterior urethra into three types. Our case conforms to Type I, which is the most frequent, and is well illustrated in the accompanying photograph. Type II, which is the least frequent, occurs when the superior ridges which are illustrated in the photograph passing toward the bladder cause the obstruction. The third type is due to an iris-like, semilunar or semicircular valve attached on either side of the verumontanum.

These valvular obstructions of the posterior urethra suggest an embryological anomaly as the etiological factor. Watson[2] noticed that developmentally there were three fibrous strands, covered by urethral mucous membrane which started from the summit of the verumontanum and diverged somewhat as they passed toward the bladder, and that three fibrous strands started from the summit of the verumontanum and diverged as they passed toward the membranous urethra. These strands were finally lost in the floor of the urethra, but in one of Watson's embryos these strands attached themselves to the roof of the urethra. This he designated as an anomaly.

The anatomy of the posterior urethra in our case speaks for such an explanation. The verumontanum is large, the fibrous strands passing toward the bladder are large, and diverge to include a large part of the circumference of the urethra, and the fibrous strands passing toward the membranous urethra are gone unless they are represented by the cusps of the valve formed. It is not hard to imagine the obstruction to the outflow of urine that would result if the fibrous strands that pass toward the bladder would pass with the same amount of divergence toward the membranous urethra. For this reason, we believe that the cusps of the valve formed in this case were originally the fibrous strands passing toward the membranous urethra, which diverged more than usual and became attached high on the walls of the urethra.

The pathology presents several points of interest. The interureteral ridge is very prominent and there is a marked depression behind it. The bladder is markedly hypertrophied and inflamed. The ureters are dilated and folded upon themselves. The ureteral walls appear as thin membranes. There is a moderate hydronephrosis and a marked pyelonephritis.

These findings are more striking than one finds in a hypertrophied prostate that has given urinary obstruction for a long time. It is difficult to believe that the pathology secondary to the obstruction in this case began to develop after birth. In reviewing the literature, we found that this suspicion was warranted because cases that were stillborn (one case was a fetus five months old), and cases dying shortly after birth had already developed this secondary pathology. This fact is interesting because it indicates that the kidneys functionate before birth.

Clinically, we expect male infants and young children to be affected and the symptoms to be those of urinary obstruction followed by infection. The clinical symptoms in the majority of cases do occur before the tenth year, but the eldest case is eighty-five years, so age does not rule out this condition.

The symptoms that concerned the parents in the present case were vomiting, loss of weight, and irritability of the child. Those are frequent symptoms in this condition, as well as in many other conditions. On examination, however, a distended bladder and both kidneys were palpated. The child passed two cubic centimeters of urine spontaneously and then one hundred and ten cubic centimeters more were removed by catheter. Following this catheterization, the mass in the region of the bladder disappeared. The second attempt at catheterization met with obstruction in the region of the posterior urethra. The distended bladder, residual urine, and at times obstruction to catheterization are important points in making a diagnosis.

The treatment for this condition is surgical. Eight of the twelve cases reported by Young, Fronz and Baldwin were operated, with six cases cured and two cases markedly improved.

The prognosis of operated cases, no doubt, will depend on the amount of renal damage already done and the amount of infection present. We must bear in mind that at times there is a considerable amount of damage done at birth. The prognosis of unoperated cases naturally depends on the degree of obstruction. They eventually develop a genito-urinary infection which leads to septicemia and death.

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## THE ENGLISH BIRTH RATE

The birth rate in England and Wales for 1922 is the lowest recorded in any year, with the exception of the war years of 1917-1919. The number of births during 1922 is 780,124. In 1921 there were 848,814 births. Fortunately, the infant death rate is slightly lower, and very much lower than it was at the beginning of this century, but the diminishing birth rate is a matter of grave concern to the English people. The registrar-general's statistical review will interest students of this subject.

## New England Surgical Society

# CANCER: DELAY IN ITS SURGICAL TREATMENT

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AND

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THREE years ago the writers made a study of the cases of carcinoma admitted to the surgical services at the Massachusetts General Hospital during the two years, 1917-1918,[1] in an attempt to determine why the statistics in regard to the surgical cure of the disease were so unsatisfactory. The work was suggested by the papers of Wainwright,[2] Gibson,[3] and Farr,[4] who had made similar analyses of cases from the states of Pennsylvania and New York. They found great ignorance in those states, both on the part of the public and the practicing physician, in regard to the disease and its possible cure by surgical measures.

With the possibility of making this analysis in view, all cases of cancer entering the surgical wards of the Massachusetts General Hospital were asked the following questions and the answers recorded at the end of the history.

1. Character and date of first symptom.
2. Date of first consultation with a physician.
3. Date on which operation was advised and by whom.
4. Date of admission to the hospital.

As a result of the study of the 1917-1918 group of 519 cases it was found that the average duration of the disease before the patient was admitted to the hospital for operation was 12.49 months. The average delay on the part of the patient from the onset of symptoms to the first consultation with a physician was 5.4 months, and the average delay from the first consultation until an operation was advised was three months. Taking cancer of the breast as a type of cancer well known by the laity and the practicing physician, it was astonishing to find that the average duration of the disease before radical operation was suggested was 12.4 months.

The present report is similar to the previous one and is based on the 539 cases of cancer admitted to the surgical wards of the Massachusetts General Hospital during the years 1921-1922. The work was undertaken to see if the conditions had improved in the four years that had elapsed since the first series was studied because of the publicity given the disease through the work of the American Society for the Control of Cancer, the State Board of Health, and other agencies. The figures show slight, but disappointingly little, improvement.

Statistics relating to the curability of cancer by surgery or other means are discouragingly poor, and when the disease is located in accessible portions of the body, there is no reason why they should not be much better than they are at present. Unfortunately there are no symptoms characteristic of the disease itself and the growth causes no inconvenience until it interferes with the function of the organ involved. The physical signs of cancer in its early stage are a painless tumor or ulcer and when situated in accessible portions of the body such as the mouth, skin or breast, the condition should be recognized early. On the other hand in the intestines the tumor, or ulcer, usually causes no symptoms until the lumen of the gut has been narrowed and symptoms of obstruction supervene, or bloody discharge from the rectum leads the patient to consult a physician. The disease in this location is in many instances incurable when first recognized.

It should also be borne in mind that the disease runs an entirely different course in different organs. Squamous cell cancer of the buccal mucosa is a rapidly growing variety forming metastases in the regional lymph glands early but rarely forming remote metastases. Cancer of the breast is a much slower growing type which forms both regional and remote metastases. Cancer of the prostate is of slow growth particularly apt to metastasize in bone, while cancer of the large intestine is of slow growth forming metastases late in the course of the disease. The relative malignancy of the disease also varies. Thus while colloid carcinoma of the breast is a relatively benign tumor, colloid carcinoma of the rectum seems to be particularly malignant. Adeno-carcinoma of the breast is usually spoken of as a rather non-malignant form of the disease, but a large number of the cases of late recurrence, that is, recurrences occurring more than five years after operation, are found to be adeno-carcinoma.

The statistics of the curability of cancer are usually based on a series of cases operated upon who have survived operation, but these operated cases represent only a small proportion of the total number of the cases of cancer of a given organ. Probably not more than one-half of the cases of cancer are seen by a surgeon. Many are recognized as inoperable by the first physician consulted, or in the Out-Patient Departments of the hospitals. In cancer of the rectum, for example, the operability of the cases reaching a surgeon is about 50%. The operability of the disease, therefore, is not over 25%. If the percentage of cures of cases of cancer of the rectum operated upon is 25%, the percentage of cures of all cases of the disease is 6%.

The striking thing in regard to the present report is that, although there is a slight improvement, there is comparatively little difference in the figures as compared with those for the years 1917-1918. (Table 1.)

The figures as to the number of cases in certain of the groups vary considerably from those

TABLE 1

| | Number of Cases | | Duration | | Delay to First Consultation | | Delay to Operation Advised | | Delay Operation Advised to Operation | | Radical Operations | | Operative Deaths (Radical Operations) | | Other Operations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 | 1917-18 | 1921-22 |
| | | | *mos.* | *mos.* | *mos.* | *mos.* | *mos.* | *mos.* | *mos.* | *mos.* | | | | | | |
| Buccal Mucosa | 43 | 32 | 5.0 | 5.0 | 2.3 | 2.8 | 1.8 | 1.2 | .5 | .5 | 18 | 4 | 0 | 0 | 9 | 11 |
| Lip | 35 | 54 | 11.9 | 12.2 | 7.9 | 7.0 | 2.0 | 4.2 | 1.2 | .7 | 28 | 46 | 2 | 0 | 5 | 7 |
| Oesophagus | 17 | 12 | 5.3 | 5.6 | 2.0 | 3.6 | 1.0 | .25 | 0.0 | .25 | 0 | 0 | 0 | 0 | 16 | 8 |
| Stomach | 82 | 64 | 8.8 | 10.8 | 3.8 | 3.5 | 6.4 | 4.7 | .8 | 1.5 | 12 | 10 | 7 | 6 | 56 | 45 |
| Intestines | 33 | 37 | 9.4 | 10.4 | 4.7 | 5.0 | 5.4 | .8 | 0.0 | .25 | 8 | 7 | 4 | 4 | 21 | 24 |
| Rectum | 44 | 61 | 12.3 | 9.0 | 8.4 | 3.5 | 5.3 | .7 | .7 | .75 | 20 | 26 | 8 | 10 | 14 | 26 |
| Breast | 79 | 97 | 11.4 | 12.4 | 8.4 | 8.1 | .5 | 1.8 | .5 | 1.1 | 63 | 74 | 2 | 4 | 12 | 13 |
| Body Uterus | 8 | 7 | 13.0 | 14.0 | 6.4 | 11.0 | 4.8 | 2.3 | 0.0 | .3 | 5 | 0 | 1 | 0 | 2 | 6 |
| Cervix | 51 | 48 | 7.6 | 8.2 | 4.4 | 3.9 | 1.6 | 2.8 | 1.5 | 1.6 | 24 | 10 | 3 | 0 | 20 | 7 |
| Prostate | 25 | 28 | 15.0 | 13.8 | 10.0 | 7.0 | 3.0 | .4 | 2.0 | .6 | 12 | 13 | 5 | 3 | 9 | 5 |
| Bladder | 27 | 17 | 22.1 | 10.3 | 13.0 | 4.7 | 3.4 | 3.0 | 1.2 | 2.5 | 6 | 2 | 0 | 0 | 14 | 13 |
| Penis | 5 | 8 | 2.8 | 13.0 | 1.5 | 6.5 | 3.3 | 6.0 | .4 | .2 | 3 | 4 | 1 | 2 | 2 | 3 |
| Larynx | 12 | 0 | 14.0 | — | 11.0 | — | 2.0 | — | 2.0 | — | 4 | — | 2 | — | 5 | — |
| Skin | 26 | 29 | 21.3 | 26.8 | 11.4 | 15.7 | 7.0 | 9.9 | 5.8 | 1.8 | 21 | 22 | 0 | 0 | 3 | 2 |
| Miscellaneous | 32 | 45 | 7.6 | 8.1 | 3.1 | 2.9 | 1.1 | 4.6 | 1.0 | .8 | 7 | 17 | 0 | 4 | 24 | 23 |
| Totals | 519 | 539 | 12.5 | 11.6 | 5.4 | 4.6 | 3.0 | 2.9 | .75 | 1.0 | 231 | 235 | 35<br>(15%) | 33<br>(14%) | 212 | 193 |

given in the previous report, but this is accounted for by changes in the local conditions. In the previous report 42 of the 51 cases of cancer of the cervix were operated upon, while in the present group in only 16 out of 48 was any surgical procedure deemed advisable. The remainder were referred to the Huntington Hospital for radium treatment. In other words the cases for operation were more carefully selected and all cases in which the chances for surgical cure were remote were referred for radium treatment.

The average age of the 539 patients was 53 years as against 52.9 years in the previous report. There were 281 males and 258 females.

*Duration.* The average total duration of the disease from the onset of symptoms until the patient was admitted to the hospital was 11.6 months as compared with 12.49 months in the previous series. In other words the patients were admitted nearly one month earlier. The duration of the disease in different organs varied considerably. Thus in cancer of the skin, a visible but slow growing and non-metastasizing type, the average duration was 36.8 months. Many of these cases, however, had been treated previously by recognized methods without relief before being referred for operation. In cancer of the rectum the average duration of the disease was 9 months, altogether too long a period if surgical cure by radical operation is to be expected, but better than 12.3 months, which was the average duration of the disease in the other series. The average duration of the 97 cases of cancer of the breast was 12.4 months, which is discouraging considering the publicity that has been given this particular form of cancer.

*Delay from the Onset of Symptoms to the First Consultation with a Physician.* The average delay from the onset of symptoms to the first consultation was 4.6 months as against 5.4 months in the other series, an improvement of .8 month or 14.5%. This diminution in the delay was quite general throughout all the larger groups of cases and not marked in any one. In the smaller groups there is much more chance of error and we do not feel that the figures are of so much value. The delay to the first consultation apparently had little relation to the first symptom noticed. Thus the first symptoms in cancer of the rectum were either pain, bloody discharge or diarrhea in nearly every instance, yet the delay on the part of the patient before consulting a physician was nine months. In cancer of the prostate the delay was seven months although the first symptoms—pain, hematuria, frequency, etc.—caused distinct inconvenience.

*Delay from the First Consultation to Operation Advised.* The average delay on the part of the first physician consulted until operation was advised was 2.9 months, an improvement of

.1 month or 3.1%. This would imply that the educational campaign has had more effect on the laity than on the average general practitioner. Any delay on the part of the practitioner of less than one month was considered as "no delay" as in internal cancer a certain amount of laboratory work is necessary before a correct diagnosis can be made. Taking the larger groups of cases,—cancer of the lip, buccal mucosa, stomach, rectum, breast and cervix (356 cases),—the figures are nearly the same,—2.7 months. In cancer of the breast, 97 cases, the delay was 1.8 months, which is unnecessarily long. It was impossible to determine how many of the patients received poor advice from the first physician consulted, although in some instances this fact was noted in the record. Thus in 64 of the 539 cases (11.8%) what in our opinion was poor advice was given at the first consultation. This usually consisted of failure to make a proper physical examination such as a digital examination of the rectum or vagina. In 15 cases of cancer of the breast, however, (15%) in which a physical examination was made, poor advice was given and the possibility of the tumor being cancer was evidently not considered. In four of these cases the growth was excised without removing the breast and the patient later sent into the hospital, while in the other 11 the patient was given an ointment or some other form of medication and told not to bother about the tumor. It is only fair to say, however, that in most instances the physician first consulted recognized the possibility of cancer and recommended operation at once.

*Delay from Operation Advised to Operation.* The average delay from the time operation was advised to operation was one month. This is a slightly longer period than in the other series but cannot be considered long as at least two weeks are necessary for a patient to make the necessary arrangements before he enters a hospital. In other words the average patient accepted the physician's advice for an operation without question.

*Operation.* The figures in regard to the type of operation performed and the operability are approximately the same as in the previous series. Two hundred and thirty-five cases, 43.6%, had what may be termed a radical operation performed with an operative mortality of 14%. In the other series 44.5% had a radical operation performed with a mortality of 15%. The mortality in both of these series seems high.

TABLE 2

| | 1921-1922 | | 1917-1918 | |
|---|---|---|---|---|
| | Cases | Mortality | Cases | Mortality |
| Radical operations | 235 | 14% | 231 | 15% |
| Palliative operations | 131 | 15% | 139 | 14% |
| Exploratory operations | 60 | 16% | 73 | 5.4% |
| No operation | 111 | 5% | 76 | 2% |

Dividing the cases into groups it is seen that the highest mortality occurred in the genito-urinary cases and those in which a laparotomy was performed.

TABLE 3—OPERATIVE MORTALITY

| | Radical Operations | | All Operations | |
|---|---|---|---|---|
| | Cases | Mortality | Cases | Mortality |
| Mouth, lip, tongue, etc. | 50 | 0% | 68 | 0% |
| Laparotomies | 63 | 34.9% | 192 | 24.5% |
| Genito-urinary | 20 | 30% | 41 | 26.8% |
| Miscellaneous | 102 | 4.9% | 127 | 5.5% |

Sepsis in one form or another was the most frequent cause of death and accounted for 47% of the mortality. In 14% of the deaths the actual cause was undetermined but was probably due in a majority of the cases to a combination of shock, haemorrhage, and infection.

TABLE 4—OPERATIVE MORTALITY
CAUSE OF DEATH

| | | | |
|---|---|---|---|
| Sepsis | 28 | Undetermined | 9 |
| Pulmonary embolism | 5 | Obstruction | 3 |
| Shock | 4 | Haemorrhage | 7 |
| Cardiac | 1 | Pneumonia | 6 |
| | | Renal | 2 |

### SUMMARY

Cancer in its early stages gives rise to no symptoms.

The average duration of the disease from the time it was first noticed until the patient was admitted to the hospital was 11.6 months.

The delay on the part of the patient from the time the disease was first noticed until the first consultation with a physician was 4.6 months.

The average delay from the first consultation to the time operation was advised was 2.9 months. In 97 cases of carcinoma of the breast it was 1.8 months.

Fourteen per cent. of all cases and 15% of the cases of carcinoma of the breast are known to have received poor advice from the first physician consulted.

The average delay on the part of the patient from the time operation was advised until he entered the hospital was one month.

Only 43.6% of the cases admitted to the hospital were considered suitable for an attempt at cure by a radical operation.

The operative mortality in all cases in which a radical operation was done was 14%. The operative mortality in cases in which a laparotomy was performed was 34.6%. Sepsis in some form was the most frequent postoperative complication and caused 47% of the deaths.

Comparison of the figures in this report with those of a similar report made three years ago show: *a.* The duration of the disease at the time the patient was admitted to the hospital to be .9 of a month less (7.2%). *b.* That the delay on the part of the patient from the first appearance of the disease to the first consultation with a physician was .8 of a month less (14.5%). *c.* That the delay on the part of the first physician consulted before advising operation was .1 of a month less (3%).

As a result of this study it would appear that the mortality from cancer is high and the percentage of cures relatively small, much smaller in fact than one is led to believe from reading the report of a series of cases. It would seem that more must be done to educate the public to consult a competent physician for any suspicious tumor, ulcer or other symptom, and to educate a certain group of practitioners to insist on immediate appropriate treatment in any suspicious case. The figures suggest that the educational campaign in regard to cancer carried on during the last few years has had more effect on the laity than on the general practitioner. We feel that more can be accomplished in reducing the mortality from the disease by early radical treatment than by improvement in our surgical technique. It is impossible to recognize certain cases of cancer, as cancer of the stomach, until they are well advanced, while the disease in the oesophagus is practically never operable. On the other hand, cancer of the buccal mucosa, breast, uterus, rectum, and skin, representing in this series 60% of all cases, can practically always be recognized early and our percentage of cures in these groups should be much greater than it is at present.

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## DISCUSSION

**Dr. Robert B. Greenough**, Boston: Of course, we do not know the exact moment at which malignant disease begins to extend from its point of origin, but we stand on the general principle that it is a local disease for a certain length of time, and only after a certain period does it begin to extend and reach the stage at which it is inoperable. It is hard to determine these facts by experimental work because tumors in animals are not directly comparable to tumors in human beings, but experimental work has shown that within a period of 42 days no metastasis takes place in an animal unless a tumor is maltreated. In human beings we cannot tell so well the moment of origin of cancer, and we have to judge from the first symptoms which bring the patient to consult the physician, but we have all seen cases in which a patient had metastatic disease very shortly after the original discovery of the tumor. In cases of cancer of the breast it occasionally happens that a woman detects the enlarged lymph-nodes in the axilla before she discovers the tumor of the breast, and I have seen an experienced surgeon who was unable to discover a tumor in the breast until he had taken off the breast and had it submitted to the pathologist.

In cases of cancer of the lip we are taught that after three months we may fairly suppose that the lymph nodes are already involved. When we contrast this six weeks' period or even a three months' period with the figures Dr. Simmons presents, we realize that in many cases the fight is lost before we begin the treatment. Can anything be done to improve this situation?

I believe that this paper of Dr. Simmons and Dr. Daland is a communication of the greatest value because it contains in it a justification for all of the publicity work which has been done on the cancer problem. If the patient delays four months and a half before consulting his physician, that period must be shortened materially, and if the doctor is going to take three months before he discovers he is dealing with something that needs radical treatment, we must do something more with the doctor.

We have been trying to get similar figures from all over the country in regard to cancer of the uterus, but these data are not recorded in the case records of many of the great hospitals in the country, because the only way they can be put in the record is by official decree. The Executive Committee of the Massachusetts General Hospital requires of every house-officer taking a cancer history that he shall fill in what we call the "cancer data," and this is the material which Dr. Simmons and Dr. Daland have collected and studied. We would urge that other hospitals do this same thing, because the larger the mass of figures obtained, the more valuable the results. The Public Health Association had a discussion on this subject, and they agreed that the one thing that was lacking in cancer statistics was accurate morbidity statistics. The only figures we have got are figures on mortality, and everybody knows that many cases do not appear in the mortality statistics because they have been cured of the disease.

**Dr. Frederick B. Sweet**, Springfield: Apropos of what Dr. Greenough said relative to the possibility of the disease first appearing in the lymph tract, I have had two rather interesting cases in the last few months, in both of which the growth first appeared in an axillary node. In the first, the breast was removed, although no tumor could be detected by physical examination. The breast was examined after removal by Dr. Fred Jones, pathologist at the Springfield Hospital, who cut many sections but found no evidence of new growth. A few months after this I saw another case in which there was also primary involvement of the axillary glands. Remembering my former experience and finding no evidence of growth in the breast I was content to simply dissect the axilla. Six months later I was humiliated to find a small carcinomatous growth in the breast itself. In both the above cases the primary growth was in the lymphatic tract and not in aberrant breast tissue.

Dr. George C. Wilkins, Manchester: When I received the program yesterday morning I was particularly interested in the figures given by Dr. Simmons, and as my personal records were available, I took the time to look over something like 200 cases. After eliminating those in which the data required were not available in the histories, and the epitheliomata of the skin in which the time varies so greatly, it left me exactly 99 cases, these cases including carcinoma of the tongue, mouth, lips, breast, penis, uterus, cervix, kidney, etc., and were cases which were sent for diagnosis or for treatment, either operative or radium treatment. These cases all came from Manchester or the southern half of New Hampshire. There was some difference in the final results as compared with the figures given by Dr. Simmons, and I thought they were worth while presenting. In this series of cases the average delay of the patient from onset of symptoms to the first consultation was seven months. The average delay of the first physician until operation or treatment was advised was 1.1 months—somewhat less than Dr. Simmons' figures. The average delay from the time that operation or treatment was advised until such treatment was given meaning the delay of the patient, was 18 days. It would be presumptuous on my part to suggest that the physicians of New Hampshire were any more acute in detecting cancer or suggesting treatment than they are farther south. I think that the difference is due to the fact that these patients in the majority were private patients and not hospital patients, and some of the patients came of their own initiative. So I think that if men who are especially interested in the treatment of cancer could present figures, the time element would be lower than in the larger hospitals.

Dr. Samuel J. Mixter, Boston: It seems to me as I look back over my professional life that the treatment of cancer has wonderfully advanced, and it is due, of course, largely to the improved methods of operation, and those methods are possible by avoidance of sepsis, but the better results are also due very largely to the splendid publicity work that the men who have been preaching against cancer all these years have done. The American Society has done wonderful work. Dr. Greenough's work and that of his colleagues has been wonderful. The work that Dr. Simmons has done we all know. It seems to me those men more than the operating surgeons are the men who are making the greatest advances. They are the men we should honor. There is more work to do. There isn't the excitement about it; there isn't the pleasure of saving the life of the individual, but it is saving suffering humanity throughout the full length and breadth of the land.

Dr. John M. Gile, Hanover, N. H.: We all know Dr. Greenough's work, which has been referred to by the last speaker. I wonder whether everyone of us when a patient comes to us and we have a delay of four or five months before the physician has advised us—whether we take pains to speak to that physician. But that is something that has got to be done. Dr. Simmons' figures showing a greater improvement on the part of the public than on the part of the physicians should not make us discouraged but should make us take this further step.

Dr. Lyman Allen, Burlington: Wouldn't it be possible that blanks be sent to every hospital in New England so that the hospitals could collect the data?

Dr. R. B. Greenough, Boston: I will have it done.

# SOME CLINICAL OBSERVATIONS ON CANCER OF THE PROSTATE*

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Cancer of the prostate is so frequently encountered, so frequently overlooked and so terrible in its results that any effort to shed light on its early diagnosis and its rational treatment seems justifiable.

Various writers have confirmed the frequency of this disease. In a group of nearly 700 cases of obstructing prostate, seen in our hospital and private practice, we find that 163, or 23.9 per cent., were malignant. In other words, one out of almost every four patients with prostatic obstruction has cancer.

The diagnosis of this disease is often perfectly clear. Given a patient, past middle life, with the usual symptoms of prostatic obstruction and with a stony-hard, nodular, fixed and enlarged prostate, there is little doubt as to the nature of the case, especially where nodular induration can be felt extending upward in the region of the seminal vesicles.

So clear cut a picture is not always to be found, as the local conditions are often far from being like those just described. The prostate may be but little enlarged, indeed it may be almost atrophic; its surface may be fairly smooth and quite consistent with the irregularity that is occasionally met with in cases of benign adenoma; induration may not be apparent, owing either to overlying prostatic tissue or to edema; and finally the question of mobility may be extremely difficult to decide. Extension of the disease upward toward the seminal vesicles may be difficult to recognize, either because of its slight extent or because of the combination of a short forefinger on the surgeon's part and large buttocks on the patient's part. Be that as it may, experience has shown what our records confirm, that many prostates are regarded as benign which prove later to be malignant. One may ask, what difference does it make so long as an operation for the relief of obstruction is to be done? While it may make no great difference in certain cases, in others it may result in the failure to relieve, by way of the suprapubic operation, an obstruction which might have been completely removed by the perineal route.

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On the other hand, it is not at all impossible to mistake for cancer the prostate which infection and fibrosis have rendered atrophic, nodular and firm in consistency. Prostatic calculus, although generally differentiated from other conditions by means of a radiograph, may give the palpating finger a sensation closely resembling that of carcinoma.

While it is true in the majority of cases that the patient with cancer of the prostate complains of symptoms due to prostatic obstruction, it is also true, as Bumpus (*Surg., Gyn. & Obst.*, Aug., 1922) says, that "carcinoma of the prostate often becomes very extensive and even metastasizes before urinary symptoms call attention to its presence." In the group of cases studied by us over 22 per cent. complained of symptoms other than those associated with the urinary tract. While in most the urinary symptoms were sufficiently prominent to direct attention to the organs in question, there were many in whom such symptoms were definitely in the background. These cases suffered from pain, often constant and frequently agonizing, located in the suprapubic region, back, hips, back of the thigh, perineum or abdomen. A certain number had been previously diagnosed and treated as "neuritis" or "sciatica." A few complained of edema of one or both legs, associated with more or less pain. In other words, the prostatic lesion had given rise to early and extensive metastases which very efficiently masked the actual origin of the disease. One such patient, a man of 57, illustrates this point very well. For two and one-half months he had suffered from pain below the left costal margin, together with severe gastric pain after meals. There were no urinary symptoms whatever. Routine examination showed a much enlarged, hard, fixed prostate and x-ray showed extensive metastases. Another patient, only 47 years of age, had had painful defecation for five months, pain in the buttocks for two months, nocturia and dribbling for five weeks. Rectal examination showed an extensive involvement of the prostate; suprapubic cystotomy revealed inoperable cancer of the prostate and bladder wall. A third patient, aged 67, complained for one year of pain in the right leg and hip and had more recently noticed a lump just above the right knee. He also had a severe painful cough. Rectal examination showed unmistakable cancer of the prostate and x-ray showed metastases in the femur and skull. While cases of this sort are infrequent, they are common enough to keep us constantly on guard and important enough to warrant their narration.

As it is obvious that the symptoms enumerated in these cases were due to metastases and as experience has shown that extension of the disease in the prostate to other parts may, and often does, occur early and without the production of symptoms, one can readily see the importance of radiographs of the entire skeletal system. As a matter of fact, and for economic reasons, two plates which include the bony pelvis, the upper ends of the femurs, and the sacral and lower lumbar vertebrae will suffice in most cases. By this means one may occasionally make a diagnosis in a doubtful case. Bumpus has recently (*loc. cit.*) stated that "in 28 per cent. there are metastases to the bones when the patients are first examined." Our experience shows an even greater incidence of metastases, namely 58 per cent.! It is necessary to clarify this statement by remarking that the cases selected for this examination have not only been comparatively few in number but also have generally been those in whom metastases were pretty definitely present. It is certain, however, that the x-ray is an indispensable adjunct to the urologist, as upon the results of this examination he can formulate his views as to diagnosis, treatment and prognosis.

While it has no definite bearing on the diagnosis, we wish to remark that our study of this group of nearly 700 patients has shown what we have long believed,—first, that malignant disease of the prostate is likely to produce symptoms at an earlier age than does benign adenoma; second, that the urine is likely to be less severely infected in the former than in the latter condition. In regard to the first point, we find that the average age of this group was 58 years, the youngest being 41. In a previous study of another large group of prostates, mostly benign cases, studied by one of us (J.D.B.), the average age was 63 years. As regards the condition of the urine, we find that in 44.6 per cent. it was reported as "negative" and in a very considerable number of others the amount of pus was extremely small. We believe this is in marked contrast to the condition of the urine found in an equal number of cases of benign adenoma. It is also a fact that even with a history of marked urinary symptoms of considerable duration the patient with malignant disease will generally have a better blood chemistry and show less evidence of urinary insufficiency than his brother with the adenoma.

Having made his diagnosis, the surgeon finds himself confronted with the very real problem of treatment. While we do not propose to go into all the details of this question at this time, we feel that certain generalizations can be made. In the first place, it should be remembered that the patient who presents himself early enough in the disease to give promise of permanent cure is extremely rare. In almost every instance the growth has extended beyond the reach of the knife or of radium and the most that can be looked for is relief of greater or less amount and of greater or less duration. The few recorded cases which have been permanently cured are composed largely of those in whom the diagnosis was made by the pathologist who chanced upon an area of cancer in his examination of the tissue removed. In view of this fact, we feel that all prostatic tissue removed, regardless of the pre-operative diagnosis, should be subjected to careful microscopic study. In those cases where a definite diagnosis of cancer can be made before operation, either by rectal palpation or cystoscopic examination, or by a combination of the two, the probability of permanent cure is almost "nil."

As it has been shown that metastases in the bones, or elsewhere, are extremely common even when the patient is first seen, it is obvious that this finding must influence one in the course he will pursue. In cases with no demonstrable metastases, but with definite urinary obstruction, every effort should be made to completely remove the disease. It is generally conceded that this can be done more thoroughly and advantageously by the perineal than by the suprapubic route. Whether radium shall be used in conjunction with this operation, is still *sub-judice*. In certain cases it would be unwise, owing to the possibility of damage to other structures, especially the rectum, on the one hand, and on the other because of the obvious futility of its employment.

In cases with metastases and with well marked urinary disturbances, one is justified in removing enough of the cancerous tissue at the bladder neck to relieve obstruction. Just how far this dissection should be carried depends upon the individual case, but as it is obvious that nothing more than temporary relief can be afforded the patient should not be subjected to too extensive an operation.

Experience has shown that many of the patients so treated will live for a surprising length of time, comparatively free from urinary symptoms and dying eventually from intercurrent disease.

Certain cases are seen with extensive metastases and widespread bladder involvement, whose general condition precludes anything but the most simple palliative measures. In these patients a simple suprapubic cystotomy, under local novocain anaesthesia, can be done with little or no reaction. The proper adjustment of a self-retaining catheter or other simple device may enable them to continue for a time with more or less comfort and with adequate bladder drainage.

The relief of pain, a symptom which has been shown to be so frequent and so severe, is a matter often of extreme difficulty. In these cases, whether or no operative procedures have been carried out, it is definitely worth while to try the effect of deep x-ray therapy. While this may afford no relief whatever, it will at least produce no harmful effects if undertaken by a skilled radiologist and if the cases are properly selected. Furthermore, it is possible, and even probable, that the growth of cancer cells may be inhibited to a greater or less degree by this valuable therapeutic agent, and therefore we see no reason why it should not be employed in practically every case of prostatic cancer, whether operated or not.

We cannot refrain from calling attention to the fact that every so often a prostate is removed which arouses no suggestion of malignancy, either before or at the time of operation, and which is reported by the pathologist to be simple adenoma. Subsequent clinical observation shows that a bit of cancerous tissue has escaped the observation of both the surgeon and the pathologist, a circumstance which is doubtless unavoidable, but which is most disconcerting. A case which came under our observation some time ago was equally disconcerting. In this instance the pre-operative, as well as the operative findings aroused the suspicion of cancer and this suspicion was borne out by the pathologist. The patient's family was informed of the circumstances. Several years have now elapsed since this operation, and during this time frequent observation has shown that the diagnosis was either wrong or that we are dealing with one of those rare cases of permanent cure. There are numerous possibilities of error for which it is well to be on guard.

In closing these remarks, we wish to lay stress on certain points.

1. Patients with cancer of the prostate are generally seen at an earlier age than those with adenoma; their urine is generally cleaner; their blood chemistry may be better and they may be in excellent general condition. On the other hand, among our hospital patients there were

many whose urinary symptoms were so slight and whose general condition was so bad that operation was considered inadvisable. As a mat-of fact six of these patients died in the hospital without operation and in spite of every effort which could be made to pull them through.

2. In many patients the x-ray may show skeletal metastases, even when urinary disturbances are slight and of but brief duration. For this reason a radiograph should be made as part of every routine examination.

3. Where metastases are found less extensive operations are indicated than where they do not exist.

4. Surgery alone offers more chance of success than radium alone. The two combined are often advantageous, but radium may at times produce evil results in unskilled hands. Deep x-ray therapy, with or without surgery, may relieve pain and even inhibit the course of the disease.

5. The symptomatology of prostatic cancer is so varied and so indefinite that we believe a rectal examination should be made as a routine in every man past middle life. Such an exploration of the prostate might also be of value in routine yearly physical examinations which are made by the life-extension institutes.

### DISCUSSION

**Dr. John W. Keefe**, Providence: Mr. President and Gentlemen, Dr. Barney in his opening remarks struck the nail on the head when he said that early diagnosis was the important thing. Cancer of the prostate differs not in so many ways from cancer in other portions of the body. We practically have the same problems to contend with and we know that the chief one is in making an early diagnosis. If one-fourth of the cases removed are cancerous, why would it not be a good idea to remove any diseased prostate in the early stages? Too often we find them come to us when the patient is in very poor general condition and long, long after the early symptoms have manifested themselves.

Besides the x-ray to help us in diagnosing metastatic trouble in the bones we all know we may have metastases in the liver and other organs that sometimes aid us in determining whether it might be cancer or not. We all have removed prostates, thinking that they were benign, and the pathologist has reported to us that they were malignant.

The essential thing to my mind is to operate on any diseased prostate; and the sooner we can operate, the better chance we have of saving the patient. Most men believe that there is sometimes primary disease in the prostate, and by removing it we may not have a recurrence. We cannot always tell by the examination of these hard, nodular prostates for we sometimes find a prostate which is very much enlarged and we feel that it is a typical adenoma, and yet that prostate may be malignant.

**Dr. Stephen A. Mahoney**, Holyoke: Bearing on this paper the following pathological report is interesting:—"Specimen of prostate received Sept. 24, 1923, microscopical examination shows carcinoma with cells of epidermoid type." (signed, J. H. Wright.) This was a case that I operated on in the latter part of last month. The man had complete urinary retention and had to wear a catheter constantly and he couldn't urinate without the inlaying catheter; a rectal examination showed an enlarged left lobe about the size of a tennis ball and a small right lobe. We did a suprapubic prostatectomy. It was rather difficult on account of the stature of the man being short and fat; but it shelled out fairly well, and when we got it out we thought it was simply an adenomatous prostate and simply by routine sent it away and got that report of cancer, and yet there was no symptom at all outside of the urinary retention. There was nothing to suggest malignancy.

**Dr. A. L. Chute**, Boston: Dr. Barney has, I feel, given us a very good résumé of what we hold today regarding carcinoma of the prostate. There are two or three things, however, which I would like to emphasize. In the first place I am convinced that we have clinically two types of carcinoma of the prostate. In one type the prostate is invaded by carcinoma from the beginning; this is the type commonly seen and this condition is easily recognized on rectal palpation. In the other type, far less often seen, we have what I believe is a malignant degeneration of an adenomatous prostate. These cases are not typical on rectal examination: they may often be enucleated suprapubically fairly easily and the pathological report comes as a surprise. In this type I believe we shall get quite a number of cures. I should say the case that Dr. Mahoney described belonged to this type.

I want to say a word about the metastases in the bones in these cases of carcinoma of the prostate. We know that the bones are frequently involved, but I think one ought not to put too much stress on this fact in the same way that one should not put too much stress on the possibility that one may mistake a stone in the right ureter for an acute appendix. It leads one to be dangerously cautious. Even if a man with carcinoma of the prostate has bone metastases, one should operate on him provided that he has urinary obstruction, because obstruction produces renal back pressure and kills, whether the obstruction is due to a carcinomatous prostate or an adenomatous prostate. The indication for the removal of this obstruction is very definite and the palliation may be well worth while even in patients with bone metastases.

I agree that these cases of carcinoma of the prostate, as a rule, should be operated upon by the perineal route. One must not confine oneself to operating on patients whom one thinks one can cure, but one must often operate upon cases in which one can only expect a certain amount of palliation and extension of life: this, unfortunately, is a problem very often seen in various sorts of malignant disease.

One word about the use of radium: It seems to me that radium is a valuable addition to surgery in the treatment of carcinoma of the prostate, but I do not believe that one should use it before operation, applying it through the urethra, as it seems to me its use in this way tends to devitalize the tissues and render healing slow. Certain cases that I have seen lead me to this conclusion. Radium should be used, I believe, at the time of operation and taken out before its devitalizing effect on the tissues is so marked that they will not heal.

**Dr. J. D. Barney**: I have nothing more to say.

## Book Reviews

*Tonsillectomy by Means of the Alveolar Eminence of the Mandible and a Guillotine, with a Review of the Collateral Issues.* By **Greenfield Sluder**, M.D. Published with ninety illustrations. St. Louis: C. V. Mosby Company. 1923. Price $5.00 net.

A satisfactory presentation of the method of tonsillectomy mentioned above is given by the writer as the object of this monograph of 171 pages. An extensive bibliography of authors referred to throughout the book is given at the end.

The first 88 pages of the volume, including four chapters, are devoted to a very comprehensive and concise presentation of the present knowledge of the Embryology, Anatomy, Physiology, and General Pathology of the tonsils, the last two subjects being covered in a chapter by Arthur W. Proetz, M.D., and to the Indications for Tonsillectomy and the Prognosis.

In Chapter V, the author discusses the advantages of his method as opposed to others, and his summary is given below.

"The 'Sluder Technic' has the advantage of perfect result, speed, little bleeding, nitrous oxide or local anesthesia, lessened shock, performance by touch alone, little or least trauma, and unnecessary destruction.

"Dissecting and snaring offers reasonable speed, but rarely can be done under nitrous oxide. Local or ether anesthesia is usually needed.

"Sharp knife dissection has more bleeding, the maximum of unnecessary tissue is often removed with it, it cannot be done under nitrous oxide, and it usually requires more time than the other methods.

"Finger dissection may be decried if for no other reason than trauma."

Chapter VI is devoted to a description of the "Sluder Technic," with beautiful illustrations showing the relation of the tonsil to the mandible, the historical development of the tonsillectome, and the various steps of the operation. These are so clearly shown that it would seem to be the ideal method of tonsillectomy, but experience teaches that different men find different techniques best suited to their needs. The Sluder method is not the one of choice in this vicinity.

The last chapter gives a method of Adenoidectomy with Direct Vision by Dr. J. D. Kelly, Jr.

The main argument in favor of this method is directly at variance with one of the chief claims to advantage of the Sluder operation, *i.e.*, the avoidance under all circumstances of the necessity of operating by direct vision.

*A Practical Handbook of Diseases of the Ear.* By **William Milligan**, M.D., and **Wyatt Wingrave**, M.D., England. New York: William Wood and Company. 1923. Price $3.50 net.

As stated in the preface this manual of 188 pages is designed to present to the senior student of medicine a concise account of the more ordinary diseases of the ear met with in general practice. A discussion of the best methods of examination, including some anatomical considerations occupies 51 pages; diseases of external ear, 57; ear drum and middle ear, 22 pages; diseases of mastoid process, 20; middle ear complications, labyrinthitis, nerve deafness, otosclerosis and deafmutism, 28; formulae and pathological methods, 10 pages.

The book is clearly expressed and readable, and on the whole serves very well the purpose for which it was written. It would seem that the first part might be somewhat shortened and more space given to the discussion of middle ear diseases. Little is said in this connection of the importance of looking for and treating nasopharyngeal pathology, the greatest etiological factor in this class.

The discussion of middle ear tuberculosis, however, is particularly good.

Differential diagnosis is practically omitted. The remedies suggested are excellent, but many of the names somewhat unfamiliar to Americans. Leeches are occasionally recommended for external application—we believe they are seldom employed except in books.

On page 152 a complete radical mastoid operation is advised for sinus thrombosis—this would seem rather severe treatment. On the whole, this is a useful manual, though inferior to the very excellent larger book by the same writers.

# Case Records
# of the
# Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, ASSISTANT EDITOR

## CASE 10011

AN English brass finisher of fifty-four entered October 26.

F. H. His father died of cancer of the liver, his mother of heart disease.

P. H. He had "gastric fever" in Brazil at twenty-one and malaria at twenty-six.

*Habits.* Alcohol not mentioned.

P. I. Since August he had been troubled by occasional choking sensations which he thought were due to indigestion. Three weeks before admission on a cold night he was awakened by intense cramp-like pain about the heart. It was relieved by sitting near a warm stove. He was obliged to sit up the rest of the night on account of dyspnea and severe cough. He raised a good deal of "slime." Since that time the dyspnea had gradually increased and his sleep had been poor. By using an elevator, however, he had been able to keep at work until three days before admission. Then while climbing stairs he had an attack similar to his previous one except that the pain was on the right side. Since that time he had been in bed. His urine had been diminishing in amount. He had had considerable harassing cough.

P. E. Well nourished. Head and throat normal. *Heart,* pulses, artery walls, *lungs, genitals, extremities* and *reflexes* normal. *Abdomen.* Moderate spasm without tenderness in the right upper quadrant. Liver dullness from the sixth rib to 5 cm. below the costal margin. Edge not felt. Over the anterior-superior spine of the ilium was an irregular mass the size of a fist. *Pupils* markedly irregular. Reactions normal.

*T.* 99.1°-102.9°, *P.* 89-112. *R.* 24-32. Systolic *B.P.* 130. *Urine.* Normal amount, sp. gr. 1.020-1.026, a very slight trace to the slightest possible trace of albumin at all of three examinations, a few coarsely granular hyalin casts at one. *Blood.* Hgb. 85%, leucocytes 15,000-21,400; polynuclear leucocytosis. *Sputa.* Blood-tinged at two of four examinations. No tb.

For the first two days in the hospital the patient had crackles at the right apex. The resistance in the right upper quadrant disappeared in a hot bath and nothing abnormal was felt. The fever and leucocytosis were unexplained. He complained of anginoid attacks at night, relieved by amyl nitrite. October 31 the crackles were again consonating at the right top. There was slight dullness under the right clavicle. The visiting physician found no cardiac or other explanation for the dyspnea.

November 3 x-ray of the chest showed a shadow in the superior mediastinum. There was no corresponding dullness or tenderness.

That evening the patient complained of pain over the heart and dyspnea. The attack at first seemed similar to the previous anginoid attacks. In a few minutes, however, his pulse became markedly irregular, and after two or three minutes more he died.

## DISCUSSION

### BY DR. RICHARD C. CABOT

### NOTES ON THE PHYSICAL EXAMINATION

I suppose this mass was on the right side. Later in the hospital when "nothing abnormal was felt" I take it that includes the mass. So we may suppose that after the hot bath examination his total abdominal examination was negative.

We have no x-ray plate in this case.

Of course the normal aorta is "a shadow in the superior mediastinum." But we have to suppose this was something more than the normal.

### DIFFERENTIAL DIAGNOSIS

We have just the same two possibilities, as far as I see, that we had in the last case,—pure arteriosclerosis with angina, or that same combined with syphilitic aortitis and angina. We have here a little more to draw us to that second conclusion in that there is here that apparently abnormal shadow in the mediastinum, which, of course, suggests aneurism, a natural complication of aortitis. I do not see that we have anything else to help us towards the idea of aneurism. The pain is such that it could be produced by syphilitic aortitis or without that. The most striking contrast with the last case (Case 10012) is that while that lasted two years, this lasts only four months. It is something which has come much more rapidly. And I think it is striking that the visiting physician found nothing to account for the dyspnea, that is, that the heart was not fibrillating or working poorly, which makes us all the more suspect that there was some respiratory pressure and that the dyspnea was a respiratory and not a cardiac one.

A Physician: If he had an aneurism pressing on the recurrent laryngeal, that would give him dyspnea.

Dr. Cabot: No, I should not say so. That would give him hoarseness and possibly aphonia, but not dyspnea.

A Physician: Wouldn't you get it if the vocal cords were closed?

Dr. Cabot: No. One vocal cord paralyzed leaves room enough to breathe. We see a great many such cases, and they do not have dyspnea unless both are more or less paralyzed. On the other hand, if dyspnea was due to pressure on a respiratory structure it is queer that we did not have wheezing, stridor, such as that ordinarily produces. The account of the heart as negative and the account of a dyspnea unexplained are driving me towards the supposition of aneurism, especially when we remember that he had difficulty in swallowing at the beginning, and has also a pain that might accompany aneurism, though not directly explained by it.

A Physician: What would the mass over the anterior-superior spine probably be?

Dr. Cabot: Feces, I suppose. That is, masses so described are generally so explained.

One thing we ought to inquire about is the condition of the right pulmonary apex. Twice we have been told that there are râles apparently localized and persistent at the right apex. Although he has not a history which makes us think of tuberculosis, I think we are bound to on these physical signs. The second time they add that there is dullness below the clavicle. That dullness might be due to aneurism. The râles might also be due to aneurismal pressure with trouble in the lung corresponding.

I think on the whole I shall jump on that side of the fence,—say that this is syphilitic aortitis with aneurism with pressure on the gullet, with pressure on some respiratory structure explaining the dyspnea.

A Physician: He had irregular pupils.

Dr. Cabot: Yes, but the record does not say they were different sizes. His death in that case would not be due presumably to hemorrhage—most aneurisms do not break—but would be due to angina, which has been the first and most troublesome symptom. The other possibility, which I think may turn out to be the real one, would be arteriosclerosis. But then it would be very queer that he should have a normal heart, a heart at least supposed to be normal.

A Physician: The arterial walls are also said to be normal.

Dr. Cabot: Yes, that is another good point.

Could he have died of tuberculosis? I do not believe it, with so little to show for it. If he has any tuberculosis, which I doubt, I think it is a minor factor. Could he have a neoplasm? He has a mass in the mediastinum. The pressure of that would account for his dyspnea.

A Physician: But it is a cardiac type of case.

Dr. Cabot: It is in the last few months. In the last few months we have angina attacks which would not be accounted for by malignant disease. I think I am just now influenced more or less by the dark hints about that mass in the abdomen.

A Student: The little note in the record says it is a lipoma.

Dr. Cabot: Then that does us no harm one way or the other.

A Physician: How about the fever and leucocytosis?

Dr. Cabot: We have to say those are due to thrombi in the aorta or in the heart, in case they are not due to tuberculosis of the right apex. If there is aneurismal pressure, however, there may be some pneumonia or bronchiectasis from pressure, which we often get with aneurism. Perhaps that is a better explanation than the other, thrombus fever, which we go back to when we cannot find any other.

A Physician: Isn't it rather unexpected to have no cardiac signs with aneurism?

Dr. Cabot: I should say about half the aneurisms do have cardiac signs and half don't. If the aneurism does not affect the cardiac valves in any way there is no reason for any cardiac disturbance.

A Physician: How often does angina go to the right side?

Dr. Cabot: I should say once in ten times. It is not extremely uncommon.

I should like to take a vote on this case.

A Student: I should think it was syphilitic heart disease, with death due to coronary involvement.

Dr. Cabot: Do you think there is an aneurism?

Student: No.

Dr. Cabot: Syphilitic aortitis with angina death?

Student: I don't know. I had forgotten that x-ray.

Dr. Cabot: How many think this is aneurism? (Most.) How many think anything else?

Dr. Nichols: Arteriosclerosis.

Dr. Cabot: It is a good thing to have somebody on that side.

## CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Mediastinal tumor.
Pulmonary tuberculosis.

## DR. RICHARD C. CABOT'S DIAGNOSIS

Syphilitic aortitis with
Aneurism of the aorta.

Thrombosis?
Pneumonia or bronchiectasis?

### ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Fibrous arteritis of the pulmonary artery and its chief branches (syphilitic?).
Thrombosis of the pulmonary artery and its large branches.
Infarcts of the lungs.
Purulent infarct of the right lung.

2. *Secondary or terminal lesions*

Acute serofibrinous pericarditis.
Arteriosclerosis.
Hypertrophy and dilatation of the heart.
Chronic passive congestion, general.
Soft hyperplastic spleen.

3. *Historical landmarks.*

Lipoma of subcutaneous tissue of right hip.
Chronic pleuritis.
Focus of obsolete tuberculosis in a bronchial lymphatic gland.
Small adenomata of the liver.
Small angioma of the liver.

Dr. Richardson: This is an unusual case. There was an arteritis of the pulmonary artery and its branches which macroscopically and microscopically looked like syphilitic arteritis. We were, however, unable to find any treponemata. As it is it is more like this than anything else.

The patient was well developed and muscular. If his heart had weighed 350 grams it would have been normal. This heart weighed 442 grams, so there was some hypertrophy.

On the right side just below the crest of the ilium was a mass 13 by 4.5 by 4 cm. which turned out to be a lipoma.

The peritoneum and the appendix were negative. There was no excess of fluid in the pleural cavities.

The right lung, about which Dr. Cabot has spoken, was bound down to the parietal pleura in the apical region by firm adhesions, and there were adhesions between the lower lobe and the diaphragm. The left lung showed scattered old adhesions. The bronchial lymphatic glands were somewhat pigmented, and one of them showed a fibrocalcareous mass,—obsolete tuberculosis. The tissue of the lungs generally was dark salmon red, slightly leathery, and yielded much frothy fluid. The pleura of the apical region of the upper part of the superior lobe of the right lung showed a thick patch of fibrinous material, and just beneath this there was an area about seven cm. in greatest dimension resistant to the touch. In that portion immediately beneath the thickened patch there was an irregular softened infarct-like mass three cm. in greatest dimension which showed purulent infiltration,—a purulent infarct. In the middle and lower lobes there were typical black-red, tarry infarcts.

The left lung showed a thick pleural patch, but section there disclosed an ordinary infarct. At the base of the lower lobe there was another similar patch and another infarct. The tissue of the lungs generally was dark salmon red, slightly leathery, and yielded much dark red frothy fluid—chronic passive congestion. We now come to the source of the infarctions.

The first portion of the pulmonary artery showed fluid blood, but at the bifurcation of the artery into its great branches there was an elongated sausage-shaped thrombus-like mass which extended across from one great branch into the other. It was about five cm. long and had all the typical characteristics of a thrombus. The great branches of the primary branch on each side, with the exception of a few, were more or less occluded by grayish to grayish-yellow granular adhering thrombotic material. That is, a large thrombus in the main branches of the pulmonary artery and scattered all the way down in the pulmonary artery and branches of each side a series of smaller ones, the source of the infarcts. The pulmonary artery and its branches showed scattered along them and in several instances just beneath the adhering and occluding thrombi yellowish areas and areas of dark reddish discoloration, and these rested along the margins of irregular crevices in the intima. Posterior to the wall of one of the branches and in the region of one of the occluding thrombi there was a slightly enlarged pigmented lymphatic gland, but the bronchus in this region was not remarkable.

The pericardium showed acute pericarditis, 300 c.c. of dirty cloudy fluid and a layer of fibrinous material coating both surfaces. The myocardium and the valves were negative. The cavities were enlarged. The coronary arteries were free, the intima smooth.

The aorta was rather capacious and the intima of the first portion showed only a few fibrous areas; but in the abdominal portion there was considerable fibrous sclerosis with some areas of fibrocalcareous change. There was some arteriosclerosis of the great branches.

The liver weighed 2245 grams,—rather large, but negative other than for possessing two types of tumor—hemangioma and adenoma—both small. There was some distinct nutmeg marking,—chronic passive congestion.

The pancreas was negative except that there was no demonstrable duct of Wirsung, but the duct of Santorini was present and patent. There was a soft hyperplastic spleen, 245 grams.

**Microscopic examination showed** lesions in the pulmonary artery and branches like those of syphilitic arteritis, but we were unable to find any treponemata.

Dr. Cabot: If there had been first-rate x-ray work on this case, such as we have today, don't you think more would have been shown up in the lungs? I was trying to think whether we should do any better today if we had that same lesion which I have never recognized. I have read about that among Hindus. Anglo-Indian writers mention syphilitic pulmonary arteritis with multiple thrombi, but I have never seen it.

◆◆◆

## CASE 10012

A colored porter of forty-nine entered December 28.

F. H. Unimportant.

P. H. He had measles, mumps, scarlet fever, and whooping cough when young. He was then well until five years before admission.

*Habits.* Until two years before admission he drank "as much as anyone," whiskey, beer, rum, etc. For the past two years he had taken not more than a pint of whiskey a week. Since he was seventeen he had had gonorrhea steadily. He had had several buboes and sores of all kinds on the penis.

P. I. Two years ago he began to be short of breath, and was obliged to give up longshore work and afterwards railway and laundry work on account of increasing dyspnea. Finally he could not lift even a duster. He had also had attacks of pain for several months, always after exertion. They occurred at first only on rather severe exercise, but now upon slight exertion. He described them as "flighty sensations" coming from the head down, or from the lower abdomen up, usually beginning in the epigastrium, coming up under the sternum and nearly strangling him. There was a tearing sensation in the left shoulder and a feeling of "electricity" playing up and down the left arm, never the right. The pain lasted a few seconds to a minute and obliged him to stop short, stoop a little and hold to something. The progressive increase of dyspnea was gradual until five weeks before admission, when all the symptoms became much worse. Since then he had been unable because of dyspnea and cough to walk across the floor without stopping. In the last few weeks edema had appeared. For the past two weeks he had sat up in a chair at night. He had had very troublesome severe cough with white frothy sputum on the least exercise. If he leaned against a wall each beat of the heart pushed him away from it. He had a great deal of gas. At three or four in the morning he often felt gas in the stomach, pain and discomfort, and vomited. His bowels were constipated. His stools were black because of black medicine. For several weeks he had passed urine four or five times at night. Lately his urine had been very high colored, sticky, and at times nearly slimy.

P. E. A fairly well nourished, large man with moderate dyspnea. Glands the size of peas and beans in the axillae and groins. Veins of the neck and arms full and distended. Valves stood out. *Heart.* Apex impulse in the fifth space, rather diffuse and slightly heaving, 15 cm. from midsternum, 5 cm. outside the nipple line, corresponding with the left border of dullness. Right border 5 cm. from midsternum. No retromanubrial dullness. Diastolic shock just palpable over pulmonic area (?). Sounds low pitched and dim at the apex. Protodiastolic gallop rhythm. Second sound split. $P_2$ accentuated and low pitched. No murmurs. Pulses equal, regular, synchronous, small volume, increased tension. Walls thickened, slightly tortuous. Lateral excursion of brachials. *B.P.* 150-165 until January 4, 133 January 6 and 13. Chest expansion poor. Chest rose *en masse.* Some dullness in extreme base. A few scattered râles, especially in the lower half of the lungs. Numerous medium râles at the right base. *Abdomen.* Slight tenderness in the epigastrium. Liver dullness from the sixth rib to 2 cm. below the umbilicus. Edge just felt. *Genitals, pupils* and *knee-jerks* normal. *Extremities.* Moderate soft edema of the legs.

*T.* at entrance 100°, from December 30 to January 9 generally subnormal, 95.1°-98.9°; January 10 and 11 wide swinging, 96°-100.6°; afterwards general rise, 99°-103.1°. *P.* 81-120 with a terminal rise to 139. *R.* 27-59. *Urine.* Normal amount. Sp. gr. 1.008-1.012. Cloudy at one of three examinations, a slight trace to the slightest possible trace of albumin at two, rare to few hyalin and granular casts at two, rare leucocytes at one. *Blood.* Hgb. 90 per cent. Leucocytes 5,800. Polynuclears 68 per cent. Reds normal except for many large polychromatophilic cells. *Wassermann* positive.

The main symptom was dyspnea with marked Cheyne-Stokes breathing, the apnea at times lasting forty-five seconds. The patient slept only with morphia and atropin. By December 30 the edema of the legs had almost cleared. His nights became more comfortable. He had less dyspnea and Cheyne-Stokes breathing. By January 4 he was often sitting in a chair for an hour or two. One of the main features of the case was precordial discomfort, made worse by moving and by lying on the left side. Only slight edema remained, and that was localized around the sacrum. There remained only a few râles with slight dullness at the bases of the lungs. January 9 he was growing worse, was more toxic, occasionally delirious, and had more difficulty with breathing than ever. He lay on his right side all the time because he thought it relieved a pain in his right chest. He gradually went downhill. Large doses of sedatives gave him only an hour or two of sleep during the night. By January 18 there was moderate anasarca. He became irrational, occasionally getting out of bed. The blood pressure gradually came down. The night of January 19 he became stuporous, and continued to be so most of the time, with considerable dyspnea. The pulse became very weak. The lungs showed bronchovesicular breathing at the right base, a few expiratory crackling râles at both bases, and mucous râles scattered throughout. At midnight January 19 the patient died.

## DISCUSSION

BY DR. RICHARD C. CABOT

### NOTES ON THE HISTORY

These pains converge to the sternum. The description all goes fairly well for angina pectoris. This is an unusually good description in several respects of an old phenomenon in fresh terms.

The two things that are perfectly obvious in this are, first, that we have some form of disease, presumably heart disease, causing failing of compensation; the second is that this is a form of heart disease that also causes angina pectoris. Of course in a negro and one not past forty-nine the first supposition is of syphilitic aortitis.

### NOTES ON THE PHYSICAL EXAMINATION

This is a heart twenty cm. across and five cm. outside the nipple,—very much enlarged.

Diastolic shick is a term we do not use much now. This record was written years ago. It means a palpable aortic second; the sound we hear as aortic second may be so intense that we can feel it with the hand. It is not very rare in all sorts of diseases accompanied by high tension and also in aneurism.

A PHYSICIAN: This is in the pulmonary area.

DR. CABOT: That does not make much difference. We feel it over a large area. I do not believe one can tell which it is by the hand or by the stethoscope. I think we teach a little more than we know when we say, "This is the aortic and this the pulmonic area." Sometimes it is and often it is not, as necropsy shows.

"Protodiastolic gallop rhythm" means a double sound at the beginning of the gallop.

They put this down as pulmonic second. I do not feel at all sure that we shall think so when we have seen the necropsy.

We have heard that the pulses are of small volume, so although we do not know the diastolic pressure and wish we did, it presumably was not very low, because a pulse that hardly lifts the hand is small volume; it is not probable that we have a Corrigan type, which we can not help thinking of in this case. My guess is that the diastolic was about 120.

There is edema of the lungs, also a congested liver.

Aside from the apparent limitation of specific gravity there is not much to call attention to the urine.

This is the longest apnea that I can remember having heard counted. If we took a watch and counted forty-five seconds we should probably say the man was dead. Five is pretty long; ten is longer than the average. I do not think that I have ever seen forty-five equalled.

January 4 to 9 seems to have been his best period.

I notice that they use the word "toxic," and they speak of delirium, neither of which we ordinarily get with pure passive congestion. It makes them think that the brain or kidney or both are affected.

### DIFFERENTIAL DIAGNOSIS

The only positive evidence we have of syphilis is the Wassermann. Post mortem experience confirming clinical experience shows that we are generally wrong if we make the diagnosis of syphilis on a Wassermann alone. It is perfectly possible that he has it, but we have no other evidence of it. We have no evidence of syphilitic aortitis. We may have it without aortic regurgitation or aneurism, but when we do have it without these we cannot be sure of it. Perhaps this angina pectoris is due to closure of the coronary arteries, one or both, by a syphilitic process. But it is perfectly possible also that it is due to other changes in the aorta or to arteriosclerotic changes in the coronaries. We do not need to suppose syphilis merely because he has angina and a positive Wassermann.

If we do not suppose syphilis how are we to account for his heart? There is nothing to suggest a rheumatic type of trouble. We have to suppose, therefore, the ordinary hypertensive type of trouble, final weakening and death without valve lesion. That on the whole seems to me the most probable explanation of this case with syphilitic aortitis in the background but not probably causing any part of his symptoms.

The kidneys I think are probably involved. It seems to me the toxic symptoms referred to, the Cheyne-Stokes and delirium, are a little more likely to be associated with them than with any obvious brain lesion. I think there is more than a heart lesion would account for. If he had kidney trouble it is probably of the arteriosclerotic type, and my impression is that he did have it.

A **Physician**: Isn't it rather unusual to get Cheyne-Stokes breathing without brain disease?

**Dr. Cabot**: No, I should not say so. I should say that almost all our renal cases, our uremic cases, show it. We can say that the brain is poisoned, but there is no gross lesion. A great many of our pneumonias show it too. The respiratory centre is poisoned, but not anatomically affected.

A **Physician**: How do you account for such a large heart in the absence of a high blood pressure?

**Dr. Cabot**: I do not feel at all sure that high blood pressure is absent. The thing that makes most difference to the heart is the diastolic pressure, and we have no evidence that he has not a high diastolic. My hunch is that he had, and that if we had seen him earlier we should have found his systolic pressure elevated too.

A **Physician**: Can the morphia have accounted for the long apnea?

**Dr. Cabot**: Morphia tends to increase Cheyne-Stokes if there is any tendency to it, and I should suppose that might prolong the apneic period as you suggest.

It seems to me, then, the facts we have could be explained either by pure hypertrophy and dilatation of the heart secondary to nephritis and arteriosclerosis or by hypertrophy and dilatation of the heart and arteriosclerosis plus syphilitic aortitis. I do not think any human being can be certain as to whether that last is plus or minus. All the facts can be explained either way. As we can explain it by arteriosclerosis alone that seems to me on the doctrine of chances the best bet.

Aside from the heart and kidney which I have described, and the arteriosclerosis which I suppose general, there is nothing else in the case except passive congestion.

A **Physician**: Isn't he rather young to have arteriosclerosis of that degree without definite cause like syphilis?

**Dr. Cabot**: Yes, and on that account we are very apt to call these cases syphilitic even when post mortem we have no proof, and I do not know that we are wrong.

A **Physician**: He had penile sores.

**Dr. Cabot**: Yes. I think the chances of his having had syphilis are good; but the chances of our finding it are rather poor. You are right in saying that in a man who has arteriosclerosis under fifty the chances of there being arteriosclerosis in the background are good, but it is very hard to prove that in many cases. We are very much stricter, I think, in our requirements in this pathological laboratory than in many others. In many others if an early arteriosclerosis is found it is called syphilitic without any more evidence.

A **Physician**: Do you think his alcoholic history would make any difference?

**Dr. Cabot**: That is a question I have looked into a good deal in past years. I do not think good evidence has been produced to prove that alcohol has any tendency to produce arteriosclerosis. It has been blamed for it, but I cannot make out with any good evidence for thinking so.

### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic interstitial nephritis.
Uremia.
Cardiac hypertrophy and dilatation.
Arteriosclerosis.
Broken compensation.
Anasarca.
Slight edema of the lungs.
Terminal infection—bronchopneumonia?

### DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertrophy and dilatation of the heart.
Chronic nephritis, arteriosclerotic.
Arteriosclerosis.
Syphilitic aortitis?
Chronic passive congestion.

### ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Hypertrophy and dilatation of the heart.

2. *Secondary or terminal lesions*

Syphilitic aortitis.
Slight fibrous endocarditis of the aortic and mitral valves.
Septicemia, streptococcus.
Hemorrhagic infarcts of the lungs.
Infarcts of the left kidney and spleen.
Chronic passive congestion, general.
Hydrothorax, double.
Hydropericardium.

3. *Historical landmarks*

Obsolete tuberculosis of the right lung and a retroperitoneal lymphatic gland.
Slight chronic pleuritis.

**Dr. Richardson**: The necropsy in this case was made two weeks after the man died, but the body was in the refrigerator, so that we were still able to make out the conditions. Some of the marked changes that occur in the refrigerator are the definite reddening of the tissues, especially of the skin and linings of the vessels, and the accumulation of fluid in the body cavities. But on the whole we were able to make a fairly good examination.

The head examination revealed no definite lesions.

The right pleural cavity was two-thirds full of thin dirty reddish fluid. We have to discount that a little because some of it was post mortem; but still there was more than could be accounted for by that fact. The left cavity contained a considerable amount of similar fluid. There were a few old pleural adhesions.

There was an old fibrous pigmented area in the apex of the right lung and some fibrocalcareous degeneration within it,—obsolete tuberculosis. The lung elsewhere showed in two or three places what were apparently small infarcts. The source of these infarcts was not made out. The pulmonary artery and branches so far as dissected were free. There may have been a small plug in some of the minute branches. The lung tissue was a little leathery, salmon colored, and yielded a moderate amount of brownish red frothy fluid. The left lung presented a similar appearance. There was one infarct on that side.

The pericardium was half full of thin brownish-red fluid, some of which was probably post mortem. The heart weighed 670 grams,—considerably enlarged. The myocardium was fairly firm, and pale brown. We could make out no definite lesions in it. The cavities were enlarged, that of the left ventricle more especially. The valve circumferences were as follows: mitral 11.5 cm., aortic 10 cm., tricuspid 15.5 cm., pulmonary 9. cm. These circumferences are larger than we usually find them. The long period after death may have had something to do with the stretching, but nevertheless they were increased, and they correspond with the dilatation of the heart. Other than that, the aortic valve showed a slight to moderate amount of fibrosis, and there was a little of the usual sclerosis on the mitral; no definite evidence of anything that we could call at that time chronic endocarditis. There was a definite process in the aorta which extended down along the walls and the sinuses of Valsalva and to the aortic cusps in the region of the slight fibrosis mentioned. The coronary arteries were negative except that the process in the aorta extended down and around their openings, but with no very definite decrease in the size of the orifices. The intima of the aorta showed marked reddening, and scattered all along it were numerous areas of fibrosis, fibrous plaques, and in places areas of atheroma. The walls in the ascending thoracic portion showed considerable thickening in places, and there were softened areas in the media. The picture in this portion was that of syphilitic aortitis. There was some fibrous sclerosis of the great branches. Taking in the whole length of the aorta and branches we should say that there was arteriosclerosis as well as syphilitic aortitis. We were unable to find the treponemata, but the other characteristics of syphilitic aortitis were present.

**Dr. Cabot**: Was there anything in the syphilitic aortitis that would account for the hypertrophy of the heart?

**Dr. Richardson**: There was no nephritis. All we have in this case to account for it is the change in the circulatory apparatus.

**Dr. Cabot**: That change was arteriosclerosis.

**Dr. Richardson**: The most marked lesion was the syphilitic aortitis, but there was considerable arteriosclerosis.

**Dr. Cabot**: My question was whether the syphilitic lesion was such that you could imagine its causing a heart of 670 grams?

**Dr. Richardson**: I think that is a little doubtful. When the process does not involve the aortic valve to any extent we do not expect to find such hypertrophy, and the only other factor is the arteriosclerosis.

There was nothing in the liver except much post-mortem change; no stones in the gall-bladder; the bile-ducts negative. The spleen weighed 270 grams,—slightly enlarged. The tissue was red, firm, elastic,—chronic passive congestion. There was a small infarct in the spleen.

The kidneys showed no definite lesions except a small infarct. No demonstrable source for the infarction was made out here or in the spleen. We found no condition in the heart which would indicate that there was endocarditis or thrombi, so there was no source for emboli there. There is the possibility of course that bits came from the areas of softening in the wall of the aorta. Once in a while we find mural thrombosis of the aorta and infarcts. Bits come off from the aorta just as they would from thrombi on a valve or mural thrombi of the heart.

The blood culture showed numerous minute round translucent colonies of streptococcus, and it was apparently a pure culture.

A Physician: What would cause that diastolic shock?

**Dr. Cabot**: Sharp closure of his aortic valve, I should say, possibly of his pulmonary valve.

A Physician: High pressure?

**Dr. Cabot**: Yes, on one or both sides.

I was entirely wrong on the kidney, but I think not on the rest of it. I think this syphilitic aortitis though present had probably very little if anything to do with the cause of his death.

◆

## CASE 10013

An American fruit handler of eighteen entered October 8, 1923, complaining of weakness and diarrhea. The history was given by his sister.

F.H. His mother was "very nervous" and committed suicide.

*Habits.* Good.

*Occupational History.* He handled fruit near an open sewer badly needing repair. He often complained of the bad smell.

P. H. Negative.

P. I. Two weeks before admission he complained of stiffness of the neck, due he thought to a slight fall he had the day before. He continued working for two days, then had to stop because he felt tired and weak. The following day he went to the toilet at least five or six times and had two nosebleeds. His head ached and his temperature was 103°. His neck was no longer stiff. The diarrhea was unrelieved by medicine. He took only a little milk. At the end of a week he was much weaker, and growing more so. His bowels were moving at least once an hour. The stools were brownish-green water. No blood was noticed. He passed considerable gas by rectum. The temperature was 102°. His mouth was filled with sticky saliva. For a time he was delirious. His speech was slow and stuttering, and he kept chewing all the time. He sweat a good deal at night. October 4 the physician took a specimen of the blood and gave the patient broths and eggnogs. These caused a bowel movement almost immediately after taking them, but relieved the gas in the bowels. October 7 the patient felt somewhat better. During the night the fever went up and he became delirious. His sister thought he had lost at least twenty pounds during the present illness.

P. E. A pale, rather thin, apathetic boy, not oriented, looking gravely ill. Lips and tongue dry. Much débris between lips and gums. Several carious teeth. Throat red. *Heart* and *lungs* negative. Dicrotic pulse. *Abdomen.* Tympanitic, slightly tender. Three small pink papules seen. Spleen felt one cm. below costal margin. *Genitals, extremities* and *pupils* normal. *Knee-jerks* not obtained.

*T.* 102°-105.2°, with a terminal drop to 99°. *P.* 114-156. *B.P.* 110/70-115/70. *R.* 20-41. *Urine.* ℥ 29-80. Sp. gr. 1.030, a slight trace to the slightest possible trace of albumin at both of two examinations, one to three leucocytes at one. *Blood.* Hgb. 73 per cent., leucocytes 3,800-8,800 (18 tests), polynuclears 78 per cent., reds showed some achromia, platelets normal. *Wassermann* negative. *Stools.* Guaiac negative at ten examinations, strongly positive October 15.

*Orders.* October 8. Individual precautions. Warm fluids by mouth. No food for the present. Bismuth subnitrate ʒ i. Mouth care. Alcohol sponge, repeat after four hours if temperature over 104°. Enema and if necessary turpentine stupes every four hours. Boiled milk three ounces every two hours. Hot lemonade or orangeade every two hours alternating with the milk. Rectal tube and turpentine stupes p.r.n. for distention. October 10. Morphia gr. 1/8 s.c. Cereal with thin cream, toast, apple sauce, orangeade. October 11 digifolin gr. iii intramuscularly, repeat if necessary in three hours if pulse over 135. October 12. Veronal gr. v. Triple bromides gr. xx. Argyrol 5 per cent., one drop in each eye t.i.d. Boric eye wash t.i.d. Caffein sodium salicylate gr. x intramuscularly. Cold compresses to eyes. Veronal gr. v. Triple bromides gr. xx. October 13. Diet, milk ℥ iv with cream ℥ ii, 8 feedings. Apple sauce t.i.d., orange juice, zwieback. Veronal gr. x with triple bromides gr. xx, repeat once if necessary for wakefulness and restlessness. October 15. Milk ℥ v and cream ℥ i. eggnogs with ʒ i of sherry daily, soft boiled eggs, cream toast. October 16. Sodium bromide gr. xv. October 17. Triple bromides gr. xv. October 18. Triple bromides gr. x. Balsam of Peru. Zinc oxid. Castor oil. October 20. Triple bromides gr. x. Veronal gr. v. Codeia gr. 1/4. Veronal gr. v. Dakin's solution. October 21. Veronal gr. v. Triple bromides gr. xv. Alcohol sponge every four hours if temperature over 103.6°. October 22. Veronal gr. v. Triple bromides gr. xv every six hours p.r.n. for restlessness. Morphia gr. 1/4 s.c.

The diarrhea was controlled. The patient was quite toxic, and October 12 got out of bed several times. The conjunctivae were red that day. The next day he was very ill. The right ear was slightly red, but was pronounced negative by an ear consultant. October 15 the patient was semicomatose. The abdomen was stiff. There was slight general tenderness in the right lower quadrant, also slight bilateral costovertebral tenderness. By October 17 he was delirious a good deal of the time. There was less abdominal distention since milk had been largely eliminated. His neck was stiff. October 19 the temperature was swinging a little, and the pulse about 140. Nervous symptoms were marked. There was a possible Kernig. October 21 there was a small bedsore on the buttock. There were also papules on other parts of the skin and on the lower lip.

October 22 the temperature dropped a degree and a half and the pulse rose twenty-five or thirty beats in two hours or less. The abdomen was stiff. There seemed to be tenderness in the flanks.

That day operation was done. The patient was sent to the ward in a critical condition after it. He rapidly grew worse, and died that night.

## DISCUSSION

### BY DR. EDWARD L. YOUNG, JR.

This present illness gives us as good a textbook story as we could want, it seems to me, of typhoid fever of a pretty severe type, and the examination as he comes in here seems to bear it out. The orders are for the same, for distention, and to quiet him. One thing confuses in this case as in many typhoids, that is, the slight general tenderness and stiffness of the abdomen. A great many cases of typhoid have some pain in the abdomen and some spasm, so that, as in this case, it may be very confusing to recognize any clean-cut onset of perforation such as is necessary for efficient treatment.

There is the evidence of shock in the drop of temperature, the rise of pulse, and the increased stiffness of the abdomen. The treatment is the same as for any other perforation of the gut. The prognosis without operation is one hundred per cent. fatal. Operation shows recovery in from twenty to thirty per cent.,—not very good, but better than nothing. Today with the use of local anesthesia it is a much less serious procedure to explore than it is under general anesthesia. And considering the fact that nine perforations out of ten come within fifteen inches of the cecum in the ileum, it does not need much exploring. Of course there are a few exceptions that do not show perforation, but they are few and the mortality in those is only about ten per cent. So that it is a good deal better to go in and not find anything than to stay out and let the patient die, although of course in all these cases we are dealing with a very sick person.

### DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Typhoid fever with perforation of an ulcer.

### PRE-OPERATIVE DIAGNOSIS

Perforated typhoid ulcer.

### OPERATION

Local novocain. Ether. Median suprapubic incision from the pubis to the umbilicus. The peritoneum was incised with the escape of watery fecal material. A loop of ileum with fibrin on it was explored for several feet. As the appearance improved, exploration was made in the other direction along the loop. When a point about one foot from the ileocecal valve had been reached gas was heard to escape from the intestine. A perforation about the size of a slate pencil was found. The perforation was closed by infolding black silk stitches. A cigarette wick was placed to the pelvis, another in the region of the cecum. The peritoneum was closed.

### FURTHER DISCUSSION

Probably because of his mental condition and poor coöperation they had to switch to ether.

The only criticism is based on what I said about the point of perforation. The best thing is to grasp the cecum and look for it.

**Dr. Cabot**: They did not wash out. Do they ever do that nowadays?

**Dr. Young**: No. They wipe out and put the patient in Fowler's position and trust to nature to look out for sepsis.

I do not think there is anything more to say about the case except that it was a very sick typhoid patient who might or might not have died without the operation. The only criticism of the operation was the fact that they handled a lot more of the gut than should have been necessary in hunting for a perforation where ninety per cent. come within fifteen inches of the cecum.

**Dr. Cabot**: Do you remember any recovery from an operation for a typhoid perforation in this hospital?

**Dr. Young**: I do not know of any. I do not know whether that has been gone over here or not. I know that for another discussion I went over a good many records, and in all I looked up the patients died. Looking up other series of cases, of course, a great many have been put out by other hospitals, and they are unanimous in saying that from twenty to thirty per cent. recover from this operation.

### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Typhoid fever.
Laparotomy for closure of perforated typhoid ulcer.

### DR. EDWARD L. YOUNG'S DIAGNOSIS

Typhoid fever with perforation of an ulcer.
General peritonitis?

### ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Typhoid fever.)
Typhoid ulcers of the ileum and cecum.
Perforation of an ulcer of the ileum.

2. *Secondary or terminal lesions*

General peritonitis.
Typhoid hyperplasia of the mesenteric glands and spleen.
Typhoid focal lesions of liver.

3. *Historical landmarks*

Operation wound.
Decubitus.

**Dr. Richardson**: This was a clear enough case of typhoid fever with perforation of the ileum and death due to general peritonitis. There were very few ulcers in this case and they were all doing well except the one which perforated. There were a few ulcers in the cecum, but they were coming along well. There was the usual hyperplasia of the mesenteric glands and the spleen. The ulcer had been turned in and the suture was water-tight.

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## CABOT CASE RECORDS

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## BOSTON MEDICAL LIBRARY—A COMING ANNIVERSARY

THE Boston Medical Library is soon to celebrate its fiftieth anniversary. The hope has been expressed that on that occasion funds will be in hand with which to enlarge the building at 8 The Fenway—the adjoining land belongs to the library, enough to make an addition of suitable size to house its growing collection of books and objects of medical interest and to provide room for the many activities of this medical center.

On August 20, 1875, twenty-three forward looking physicians met at the rooms of the Massachusetts Medical Society at 36 Temple Place to found a medical library, and they soon started one in a room in Hamilton Place. It was a small affair, which prospered in spite of poverty; it moved to 19 Boylston Place in 1878 and then to a new fireproof building on the Fenway in 1901, where there were at that time ample accommodations for medical gatherings, as well as for the use of books. The stacks were soon filled. As early as 1908 the basement of an addition in the adjoining lot was erected and at once devoted to temporary stacks. In 1915 the rooms previously occupied by the directory for nurses were used for shelves. Since that time the funds collected for a large addition were not sufficient, and every nook and corner of the building has been crammed with books, so that the users of the library have to suffer inconvenience because many of the volumes have to be kept in places where they are not accessible.

The library, like other charitable institutions, is supported by a relatively small proportion of the community. It has about nine hundred members on its rolls. Its governing board of nine members spend much time gratuitously to keep the institution advancing in step with the needs of the time. Two librarians of boundless energy, perseverance, and tact have made the present library what it is by their labors through all the years since 1875. The collection of books and periodicals is now exceeded in numbers only by the library of the Surgeon-General's office at Washington and by the collections of the New York Academy of Medicine and the Philadelphia College of Physicians.

The library is open to all, and although only members may take out books for home use, any one in search of information on medical subjects is at liberty to consult books in the library rooms. The prompt service of the friendly attendants, always ready to be of help to strangers as well as to members, is acknowledged by the numerous visitors from all parts of the country who come to look up references on the most varied topics, knowing of the vast resources at their disposal and of the liberal policy towards the public.

The building is in an accessible situation, within a short distance of the Massachusetts station of the subway and near to the surface trolleys, yet far enough removed to secure quiet. The park department of the city has provided ample parking space for automobiles in the great public park in front of the building. Like the large medical libraries in other cities, the library is without connection with any medical school, being thoroughly independent and situated where it may best serve the entire community for many years to come. It is an institution for which New England is proud. It should have the support of the entire profession. Let everyone who has an interest in the progress of medicine in this part of the country lay his hand to the wheel and help it along.

◆

## FORMATION OF THE OBSTETRIC SECTION OF THE MASSACHUSETTS MEDICAL SOCIETY

DURING the last few years there has been a good deal of agitation over the subject of the maternal mortality in obstetrics in Massachusetts. This agitation has been based on statistics which a considerable proportion of physicians felt were more or less unfairly collected and improperly compared with the statistics obtained in other communities under different conditions, but on this comparison conditions in Massachusetts have been alleged to be in a much worse state than in various other communities. It seems to many that the real intent of this criticism is an attempt to place the conduct of private practice in Massachusetts under the control of the State Board of Health or of a national bureau composed largely of laymen. Neither of these bodies, in our opinion, is qualified to accomplish anything more than to provide a certain number of more or less highly paid officials, or nurses and social workers, who may be in a position to provide a certain amount of prenatal care, which while undoubtedly of some benefit to the patients can by no means reach the root of the evil.

We acknowledge that education of the community to a point at which prenatal care is demanded will eventually be of some value, but we feel that until means are provided to insure efficient care for the patients who are discovered to be abnormal by this prenatal care, little if any advantage will accrue to the patients, since it makes little difference whether an abnormality is discovered or not, unless adequate provision can be made for the care of that abnormality. We believe that future progress lies in the hands of the medical profession, and not in the hands of any state or national bureau.

In the past obstetrics has been largely neglected by the Massachusetts Medical Society. From time to time, that is, every three or four years, a paper dealing with an obstetrical subject has been presented at the annual meeting, and occasionally at one of the district meetings, but as compared with the prominence accorded to medical and surgical subjects the opportunity to preach better obstetrics has been extremely meager. The formation of the section on obstetrics, which was undertaken last year at the suggestion of Dr. Mongan, seems to us to open up a new chapter in the struggle for better obstetrics. The first meeting of the new section was a distinct success, and in our opinion the future of this effort is a very promising one.

In the first place it will undoubtedly awaken renewed interest in a subject with which a large proportion of the members of the Society are closely connected, and it will in addition allow of much closer contact between the men who are doing the bulk of the obstetrics in the community and the comparatively small group of men who are attempting to solve the more intricate problems in obstetrics. If the latter group meet with any success in their efforts the obstetric section will provide a most excellent medium for the transmission of the results of this study to the men who are doing the bulk of the work, a much better medium than the publication of occasional papers on obstetric subjects. Personal contact between the two groups of men will tend to remove the suspicion which lies in the minds of many practitioners that the obstetric specialist is purely selfish and is trying to enhance his own reputation at the expense of his less fortunate but perhaps more useful fellows.

This program can be well extended by including a larger proportion of obstetric papers, preferably not on abstruse obstetric problems, in the monthly meetings of the district societies which cannot fail to be of benefit to all concerned.

A permanent secretaryship of the obstetric section has been established by the Council of the Massachusetts Medical Society, with an office at the Boston Lying-In Hospital, 221 Longwood Avenue, Boston. It is hoped that the secretary will be more than the clerk of the obstetric section and that he will become the intermediary between the practitioner who has a troublesome problem to solve and the resources of a modern hospital which is backed by the entire obstetric department of the Harvard Medical School. Any communication addressed to the secretary will receive careful consideration, and any help which can be afforded by the resources of the hospital is open to the profession. Many of the members of the Massachusetts Medical Society fail to grasp the fact that the obstetric hospital should not be and has no intention of being antagonistic to the interests of the profession. The function of any hospital in the community should be primarily to afford better care and treatment to the unfortunate in the community, whether financial or physical, than can be obtained elsewhere, and also to aid the practitioner in the care of his patients. It can be definitely stated that the hospital has no idea of stealing the patient, the one object being the good of the patient. The hospital stands ready through the secretary to admit any patients who might be benefited by hospital care at the request of any qualified physician, to keep him informed as to the treatment and progress, and to return the patient to him at the conclusion of her stay in the hospital, and it also stands ready through the secretary to furnish consultation free, or for what sum the patient can fairly pay, on any patient who may be referred for consultation by her physician.

It is to be hoped that this close association of the obstetric section and the Boston Lying-In Hospital is merely an opening wedge for a closer association between the other obstetric hospitals in the various communities and the general profession. Coöperation between the hospital and the profession will do more to render unnecessary any attempt at regulation of the practice of obstetrics by state or federal bureaus than any other single influence.

The section on obstetrics has been accorded space in the BOSTON MEDICAL AND SURGICAL JOURNAL, the official organ of the Massachusetts

Medical Society, for the discussion of obstetric problems of interest to the general profession, and once a month matters of obstetrical interest will be discussed in the columns. In addition, it is proposed to publish monthly an analysis of the maternal deaths occurring throughout the State in obstetric conditions. By this means the true conditions can be brought to the attention of the profession as a whole, and the means to remedy an unsatisfactory state of affairs can be undertaken through the profession instead of through outside interference.

For example, it is recognized at the present time that the death rate following Cesarean section is much higher than it should be throughout the whole community. That means one of two things. Either that patients who are unfit for Cesarean section are being subjected to this operation, or that the operation is being performed either by improperly trained surgeons or under unsatisfactory conditions. The frank discussion of this unfortunate state of affairs under the auspices of the section on obstetrics can hardly fail to be of considerable benefit to future patients, and there are many other obstetric complications in which a frank exposition of the existing conditions is sure to be attended by good results. It seems to us that the future of the section on obstetrics can hardly fail to be a most useful one, both from the standpoint of the practitioner and of his patients.

## SEVEN YEARS OF VALUABLE RESEARCH ENDED

The National Tuberculosis Association in a communication to the Framingham *News* announces the termination of the Framingham Health and Tuberculosis Demonstration in that town.

This work completes seven years of valuable research and demonstration in life conservation beginning in 1917 which was made possible by contribution of funds to the Association by the Metropolitan Life Insurance Company.

The selection of Framingham was the result of study of many communities, because of the work already done there and its typical character as a semi-industrial community, as well as the promise of coöperation and local leadership. The results have justified the experiment. The purpose of the demonstration was primarily to study tuberculosis and its prevention, and the fundamental underlying conditions through knowledge of the existing cases, and to determine methods by which the disease could be detected and treated, the coördinate factors being the relation of the study of tuberculosis to other health problems and the evolution of the required machinery to meet the indications. An interesting phase of the study was the economic features of disease prevention.

Framingham responded by appropriations for health work and a civic spirit as shown by private and public contributions, so that the example now stands as a model for the whole country to follow, and is being applied by organizations such as the Rockefeller Foundation, the Red Cross, the Milbank Health Demonstration, and the Commonwealth Fund Demonstration.

The Framingham standard is being followed by many municipalities in efforts to discover the known causes of disease and bring the cases to proper medical and hygienic attention.

The basis for health examinations as stressed by the Framingham Demonstration has been accepted by the National Tuberculosis Association and the National Health Council and is being adopted by the medical profession. The literature evolved by the Framingham Demonstration is read generally by health workers.

One of the important accomplishments of the Demonstration is the consultation service offered to physicians for the diagnosis of early illness. This service is being widely adopted throughout the country, and Framingham will continue the practice under the auspices of the Health Committee of the Civic League.

The name of Dr. Donald B. Armstrong will always be associated with this enterprise as its director and driving force, but in 1920 he devoted himself to the establishing of the National Health Council and practically lived in New York City. From that time Dr. A. K. Stone assumed the responsibility of the administration. Dr. P. C. Bartlett continued all the way through the demonstration as the head of the medical consultation service. Dr. Armstrong came to Framingham from time to time to direct the general policy of the demonstration.

## THE HARVARD MEDICAL SCHOOL DORMITORY

The last week has shown increased interest on the part of the graduates of the School, for contributions have been coming in rapidly.

One especially interesting feature of the campaign is the coöperation shown by physicians who are not graduates of the School, evidently inspired by the conviction that better care of the students will raise the efficiency of the future practitioner and stimulate those who are to fill the teaching positions in medical colleges. The dormitory will be a memorial to those who are underwriting this project, and there will come a time when all contributing physicians will be proud of having been able to participate in this addition to the School.

It may not be yet generally understood that the Dormitory will contain a large hall for medical meetings, although we have commented upon this fact editorially. This is one of the reasons, undoubtedly, why non-graduates of the School are being so generous, and, indeed, a reason for asking for contributions from any physician in this vicinity.

## COMPARATIVE DEATH RATES IN ENGLAND AND AMERICA

During the period 1912 to 1922 the decline in the death rate has been greater in America than in England. During the war years the death rate in England exceeded that in the United States, but America suffered more during the influenza years of 1918 and 1920.

America has had a much higher mortality from typhoid fever than England, where there is almost no typhoid. The death rate from diabetes in America has increased slightly, but has shown no marked change in England. The effect of insulin will be watched with interest.

Pneumonia, Bright's, the diarrheal diseases, and those incident to pregnancy and parturition furnish higher rates in this country than in England. Suicide and accidents are also more prevalent here. There is a discreditable increase in the homicide rate in America, the tendency being upward, whereas in England the rate is less than one-tenth of that in America. One may question whether the more speedy application of justice in England is the reason.

Measles, whooping cough, cancer, diphtheria, furnish a higher death rate in England. The decline in tuberculosis is more marked in this country.

## TUBERCULOSIS MORTALITY IN COLORADO

The Public Health Reports for December, 1923, discusses the tuberculosis mortality in Colorado. During a period of thirteen years there were 23,608 certificates of death from tuberculosis. In only 3044 cases was it impossible to determine whether the disease developed in Colorado.

The average death rate for tuberculosis, all forms, in Colorado in the period 1908-1922 was 208.9 per 100,000 persons as against 1475 in the registration area.

Subtracting the number of deaths of those persons who contracted the disease outside the State, it was shown that 17,080 cases could be so classified, giving a rate of 30.8 per 100,000 for the natives, although it is conceded that this rate is too low, for obvious reasons.

An interesting feature of this study was the report of the large number of deaths following soon after arrival of the patient in Colorado. During this period 4848 persons died within three months after arriving in Colorado, and the number who died within one year is 9539. The early deaths mean that either the patients were too far advanced in the disease or did not exercise adequate judgment in the treatment adopted, for in all probability the beneficial effect of the climate was considered to be the important remedial factor, and less attention was paid to the recognized rules for conservation of strength and rest.

Authorities in this disease have for a long time advised against sending advanced cases away from home, especially since proper care, regardless of climate, has accomplished so much in the treatment of tuberculosis. The fatigue of travel and the difficulties incident to securing proper living conditions in a strange country have done great harm to many cases, but patients do not always accept the advice of physicians. The facts warrant discrimination as to the benefits to be secured by removal from home surroundings or sanatorium treatment.

## A FEATURE OF TROPICAL MEDICINE SERVICE

A tentative plan is being considered for the acceptance and care of those missionaries who have served in foreign lands, at the Deaconess Hospital in Boston.

Many missionaries suffer from exposure to climatic conditions and diseases incident to residence in tropical countries. After becoming incapacitated they come back to their native country in search of health. About five hundred missionaries representing the Methodist Church return to this country every year in search of renewed health. This service, if established, will be under the direction of Dr. George C. Shattuck.

## DR. WILLIAM M. ROBB

The registration of William M. Robb as a physician in Massachusetts was canceled by the Board of Registration in Medicine at a meeting held December 20, 1923.

Dr. Robb is now in prison under a sentence of from five to seven years, as previously referred to in this Journal.

We note that the sentence meted out to a man who forged a ten dollar bank note was two years in prison. Robb is responsible for the death of a woman and her unborn child. The act of this slayer measured by the sentence is two and a half years in prison for each life destroyed. The ten dollar criminal suffers nearly as much. Robb had to leave New Hampshire because he was caught there. Two criminal offenses would suggest the habitual criminal provided the opportunity existed. An unreformed criminal! A five year sentence!

# Miscellany

## ANNOUNCEMENT OF THE SECTION OF OBSTETRICS AND GYNECOLOGY

Charles E. Mongan, M.D., *Chairman*,
Frederick C. Irving, M.D., *Secretary*,
Thos. R. Goethals, M.D., *Clerk*, Boston Lying-In Hospital, Boston, Mass.

(Address all communications to the clerk.)

Through the courtesy of the Editor of the Boston Medical and Surgical Journal the section of Obstetrics and Gynecology is able to use the columns of the Journal as a medium of communication with the medical profession. Monthly hereafter matters pertaining to the practice of Obstetrics and Gynecology will appear in the Journal. Thorough discussion of obstetrical problems will be invited; questions if submitted concerning difficulties encountered in the practice of obstetrics will be answered freely and frankly. It will be the endeavor of officers of the section to place their services at the disposal of every practitioner in need of help. It will be the especial aim of the executive officers to do all in their power to reduce maternal mortality. The officers of the section feel that this can best be accomplished by asking for the coöperation of every practitioner of medicine in Massachusetts, whether or not he is a member of the Massachusetts Medical Society, or whether or not he practices obstetrics or practices in some other department of medicine. In other words, we appeal for the moral support, at least, of all practitioners.

From time to time there will be published in our column the causes of death in the puerperal state—popularly known as maternal deaths. No other Medical Society in the United States has ever asked formally for the support of the profession for the purpose of reducing the so-called maternal mortality. If any appreciable reductions in maternal mortality can be made, we believe it can be done by the profession working in unison.

Nowadays service is a word that has a great appeal to the public, but service without coöperation is oftentimes futile. We want coöperation on our drive to reduce "maternal mortality"; and we feel that our aim will come true if we have the support of the profession. We are of the opinion that we may have that support for the asking.

About 80 years ago an eminent anatomist, a talented teacher, a world-known *litterateur*, a former President of the Massachusetts Medical Society, called the attention of the medical world to the contagiousness of puerperal fever. With his example as our inspiration, how better can we honor the memory of Oliver Wendell Holmes than by using our best efforts to reduce maternal mortality in Massachusetts to the minimum?

For the month of October, 1923, there were reported in Massachusetts thirty-four deaths in the puerperal state.

| | |
|---|---|
| Puerperal albuminuria | 14 |
| Puerperal hemorrhage | 5 |
| Accident of labor | 2 |
| Puerperal septicemia | 8 |
| Embolus | 5 |

Of those deaths claimed by puerperal albuminuria two were post partum, and two were treated by Cesarean section; of the five claimed by puerperal hemorrhage four died of placenta previa and one of hemorrhage. Of the two accidents of labor one was post partum due to uterine inertia, and the other was due to lobar pneumonia complicating delivery. Of the eight cases of puerperal septicemia, one was due to lobar pneumonia complicating sepsis, one was due to acute septic colitis, one was general peritonitis following infection acquired at Cesarean section, one was septicemia following delivery of a macerated fetus, and four were due to puerperal sepsis uncomplicated. Of the five due to embolus, one was due to miscarriage during convalescence from operation for acute appendicitis, one following instrumental delivery, one following normal delivery; the remainder were uncomplicated.

This report the section gives without comment. The section thinks that it is worthy of careful study. The removal of cause of death in the puerperal state will reduce maternal mortality. The methods by which these causes can be removed or, at least, reduced, is worthy of our deep concern. The executive office of the section will welcome any suggestions that will aid them in their campaign.

## BOSTON MEDICAL HISTORY CLUB

At the meeting held Monday, December 17, at the Boston Medical Library, Dr. Joseph W. Courtney read an account of Gabriel Naudé, M.D. (1600-1653), the famous French bibliophile, savant, and philanthropist. Naudé's fame as a physician is negligible. He studied medicine for a short time only in Padua in 1626, but in 1628 received his degree from the Faculty of Medicine in Paris on account of the excellence of his oration on the "Antiquity of the Medical Schools of Paris," delivered before that body at a reception to licentiates in medicine. As a knowledge of dialectics and Latin was of more importance to the physician of that time than clinical observation, Naudé was deemed worthy of the title of M.D. He was later made physician-in-ordinary to Louis XIII, but took no active part in medical work and left no medical writings.

He was chiefly interested in books and learning, and his main desire in life was to have a public library founded in Paris, there being at that time but three such institutions, one in England and two in Italy. He wrote several books on topics of his time, *i.e.*, libels, sorcery, and witchcraft, the Roscrucians, and a defense of Cardinal Mazarin, but his chief work was one on books and libraries, later translated by the diarist, John Evelyn, under the title, "Instructions Concerning Erecting a Library."

He was successively librarian to the President of Mesmes, Cardinals di Bagni in Rome, Richelieu and Mazarin in Paris, and, lastly, the Royal Library in Stockholm, and he died on his way back to Paris to take up again his old post with Cardinal Mazarin on the latter's return to power in 1653.

As librarian to Mazarin, in the space of four years he brought together 40,000 books and manuscripts, making trips through various countries and buying books by the wholesale. One part of his collection consisted of 200 Bibles, the first in importance being the Mazarin or so-called 42 Line Bible, printed at Mainz by Gutenberg in 1453-56, one of which was recently sold in New York for $60,000. Both Richelieu and Mazarin were strongly in favor of public libraries, and though no formal public opening of the Mazarin Library had taken place, the public was already making use of the books, and Naudé's death alone prevented him from seeing his dream fully realized.

Dr. Francis D. Donoghue showed an original signed letter of General Lafayette written while a patient in La Charité Hospital in Paris in 1803. While walking in the court of the first Lord of Admiralty, he had fallen and broken the neck of his femur, and under the care of Deschamps and Boyer (afterward personal physician to Napoleon I) was being treated by a "new method of extension" which gave him considerable discomfort "by reason of excoriations" caused by the apparatus.

Lantern slides of the letter (with a translation made by the late Dr. A. N. Blodgett) and of Boyer's apparatus were shown. This latter consisted of a long fracture box resting on supports and attached above to a leather band which encircled the injured thigh and got a bearing on the perineum. Direct traction was made by screw action on a wooden sole, fixed to the patient's foot by chamois straps, with counter traction against the lower end of the fracture box. Dr. Donoghue noted that on his return to America in 1824 Lafayette was said to limp but seemed to have a useful leg.

James F. Ballard read brief extracts from the account books of Dr. David Townsend (1753-1829 and Dr. S. D. Townsend (1775-1869), the great-grandfather and grandfather of Dr. Charles W. Townsend, by whom the books were lately given to the Boston Medical Library. The books cover medical practice for the periods 1785-1792 and 1815-1869, and are filled with interesting facts and sidelights on the practice, treatment, and fees of those times. Dr. David Townsend served through the Revolutionary War, was at Bunker Hill, later at Valley Forge, and was afterward in charge of the Chelsea Marine Hospital. His practice was general and his patients comprised all classes of society, as shown by the notes read by Mr. Ballard. Of especial interest is his mention of "electorized" treatment given Governor Hancock twice a day in 1791, a year before Galvani published his work.

Dr. S. D. Townsend was surgeon to the U. S. S. *Independence,* on which Farragut was a midshipman, during her trip through the Mediterranean in 1815, and gives a careful description of an epidemic of influenza on shipboard. He was afterward visiting surgeon to the Massachusetts General Hospital, being present at the first operation under ether, and himself performing the second. His books give much information on all sides of medical practice, even to attending executions and visiting pirates, and contain analyzed lists of operations, among them being 150 amputations with end-results.

Such books as these are of great historical value, and the Medical Library is already the repository for a number of such medical family collections, which, it is hoped, will some day be carefully and thoroughly written up.

Mr. Ballard also showed fee tables of Hampton Falls in 1854 and Chelsea in 1869, each of which contain interesting data; also the recent reprint of Edward Jenner's book on "Vaccination," and other recent accessions to the Medical Library.

The next meeting will be held on January 21.

## DIABETIC COLUMN

THE Insulin Meeting held at the Boston Medical Library Wednesday, December 19, was crowded to the doors.

Dr. Reginald Fitz, in an interesting paper, described the value of insulin from the economic point of view. Patients, though expending considerable money for insulin, may thereby be enabled to earn amounts equalling or even doubling their insulin expense. Such patients are earning large dividends on the monies expended.

Dr. Newburgh cited evidence to show that there is at present no proof that the patients' carbohydrate tolerance is increased by the taking of insulin, even over long periods. He stressed the fact that tolerance is lost by patients showing glycosuria even when taking insulin.

Dr. Joslin laid emphasis on the practical side of the treatment of diabetes and its complications, especially gangrene. He said that coma must be recognized in its inception, and treatment begun by the general practitioner in the home, with insulin, enemata, and the forcing of fluids. Dr. Millard Smith demonstrated the micro-method for the quantitative determination of urinary sugar.

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## STATE ACTIVITIES RELATING TO THE PRACTICE OF MEDICINE

Samuel Wilkinson, 536 Tremont Street, Boston, Mass., was in court December 3, 1923, charged with holding himself out as a practitioner of medicine without being registered. He was in the District Court (Central Municipal, Boston) on the above date. His case was continued to December 10, when he pleaded guilty; his case was then continued for disposition until December 17, 1923, on which date he was fined $100 and paid.

The further report states that he had two signs at the above address which read: Dr. S. Wilkinson; that he had been a nurse in different hospitals and was at one time in a doctor's office, located in Warren Chambers; that he was later at 755 Boylston Street, with a corporation known as the Boston Prophylaxis Company; that he had been located at 536 Tremont Street for about a month. The signs have been removed since he was summoned into Court.

William E. MacDougall, 415 Columbus Avenue, Boston, Mass., was also in Court on December 3, 1923, on two charges; one, holding himself out as a practitioner of medicine, and the second charge, for practicing medicine. He was fined $200 ($100 on each count), from which sentence he appealed.

Joseph C. Jasper, 120 Tremont Street, Boston, Mass., was in Court on November 23, 1923, on two charges: one, holding himself out as a practitioner of medicine, and the second charge, practicing medicine. He was fined $200 on December 3, from which sentence he appealed.

A clipping from the *Pittsfield Eagle*, under date of December 15, 1923, reports that Leonard A. Lawrence was arrested on December 14, by State Detective Thomas E. Bligh on a charge of practicing medicine without registration. It is alleged that he is a chiropractor and has advertised himself as such in this city, and has practiced as such.

State Police Patrolman Foster called upon Lawrence on December 14, and was treated by him. Foster states that the defendant not only examined his spine, but told him he had certain ailments due to the condition of his spine. The defendant pleaded not guilty, his case being continued to Thursday, December 20. He was admitted to a bail of $500.

## OFFICERS OF THE NEW ENGLAND PEDIATRIC SOCIETY

The annual meeting of the New England Pediatric Society was held December 14, 1923. The following-named officers were elected:

President, Dr. Edwin H. Place of Boston.

Vice-President, Dr. George C. King of Fall River.

Secretary-Treasurer, Dr. Joseph Garland of Boston.

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## SMALLPOX IN NEW HAMPSHIRE

Four cases of this disease have been reported in Sanbornville, N. H. Schools, churches and theatres have been ordered closed.

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## News Items

New Director Appointed.—Mr. Edward M. Van Cleve has been obliged to retire from the position of Managing Director of the National Committee for the Prevention of Blindness, and Mr. Lewis H. Carris has been appointed his successor.

Week's Death Rate in Boston.—During the week ending December 22, 1923, the number of deaths reported was 227, against 266 last year, with a rate of 15.36. There were 34 deaths under one year of age against 40 last year. The number of cases of principal reportable diseases were: Diphtheria, 73; scarlet fever, 76; measles, 34; whooping cough, 10; typhoid fever, 4; tuberculosis, 76. Included in the above, were the following cases of non-residents: Diphtheria, 8; scarlet fever, 4; measles, 1; typhoid fever, 1; tuberculosis, 4. Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 1; tuberculosis, 22. Included in the above, were the following cases of non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 2.

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## Correspondence

### PARATHYROIDS AND PANCREAS, WHAT IS THEIR RELATION?

*Mr. Editor:*

The question of the treatment of Diabetes Mellitus is becoming intensely important from the standpoint of new developments in medicine. The Toronto people have insisted that because insulin is destroyed by trypsin it cannot be given by mouth and they have also contended that because insulin is the thing which stimulates sugar burning and is destroyed in the stomach that oral pancreas therapy is of no value in diabetes.

Now we have some English investigators who tell us that these statements are not founded on fact and that insulin *is active* if given by mouth, provided you know how to give it.

These same investigators tell us that parathyroid given in conjunction with insulin makes the latter more active, or at least it increases the reaction to it and makes necessary only a remarkably reduced dosage.

A short article in the *British Medical Journal* (Nov. 17, 1923, p. 916) embodies the case reports and laboratory figures, from Forrest, of Newcastle-on-Tyne. He gives five cases treated with insulin alone and then again with insulin and parathyroid combined, but as the results are practically the same I will quote but one.

"Case 3. Twenty units insulin given alone. Blood sugar: 0.362 per cent. 0.214, 0.156, 0.172, and 0.224 per cent.

Twenty units insulin given with 1 gr. parathyroid. Blood-sugar: 0.339, 0.246, 0.182, 0.125, 0.107, 0.091, 0.088, and 0.122 per cent."

This most definite action on the blood-sugar curve by combined insulin and parathyroid given orally ought to be welcomed not only by the general practitioner but it seems to vindicate what Harrower of California has long maintained.

The injection method of using insulin is a nuisance, not only to the physician but to the patient as well. It is hoped that other combinations of insulin will be tried out by the mouth and the therapeutic possibilities ascertained. It seems as if the insulin can be protected by combining it with some other gland product or chemical substance that its use by mouth will become possible.

J. Danforth Taylor, M.D.

East Boston, Dec. 27th, 1923.

## A LETTER FROM ONE WHO APPRECIATES THE IMPORTANCE OF THE DORMITORY

Nova Scotia, December 15, 1923.

*Dear Dr. Joslin:*

Now in regard to the Harvard Medical School Dormitory Fund. As I look back to those days when I struggled to get through that School with the scantiest of means, or rather I should say, with no means at all, I wonder how I ever had the courage and strength to bear up under it. To get a place of shelter and study I had to tend a furnace for an old lady on Columbus Avenue. I had to eat at cheap restaurants and often went all day without any dinner. I got through somehow and had a weary struggle for many years after.

I can readily appreciate the value of such a dormitory as you have in mind.

The possibility of having to discontinue my practice, to look after my wife's health and other matters of personal nature, prevent me from being as generous as I would otherwise be at this time, but to show my good will towards the object you now have in hand I am pleased to hand you my cheque for $100 towards the Dormitory which you can hand over to the proper parties.

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## NOTICES

### THE SPRINGFIELD ACADEMY OF MEDICINE

The speaker for the meeting of January 8 will be Dr. Walter W. Palmer, of New York City, Professor of Medicine at the College of Physicians and Surgeons, Columbia University.

### NEW ENGLAND PEDIATRIC SOCIETY

The eighty-second meeting of the New England Pediatric Society will be held Friday, January 11, 1924, at the Boston Medical Library, at 8.15 p. m.

The following papers will be presented:

1. The President's Address, Edwin H. Place, M.D., Boston.
2. Chronic Leucocytosis in Infants and Young Children, Thomas E. Buckman, M.D., Boston.
3. Certain Chemical Factors in the Pathogenesis of Tetany, James L. Gamble, M.D., Boston.

Light refreshments will be served after the meeting.

Edwin H. Place, M.D., *President.*
Joseph Garland, M.D., *Secretary.*

### STAFF CLINICAL MEETING, BOSTON CITY HOSPITAL

CHEEVER SURGICAL AMPHITHEATRE

Friday, January 4, 1924, at 8:15 P. M.

1. Acute Encephalitis, Arthur W. Fairbanks.
2. Spinal Fluid in Encephalitis, James B. Ayer.
3. Late Manifestations of Encephalitis, John J. Thomas.

Open discussion. Physicians and medical students invited.

John J. Dowling,
*Superintendent.*

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## SOCIETY MEETINGS

### DISTRICT SOCIETIES

*Bristol South District Medical Society:*

The annual meeting will be held in New Bedford, May 1, 1924.

*Essex North:*—Annual meeting at Lawrence General Hospital, May 7, 1924.

*Essex South District Medical Society:*

January 7, 1924:—Essex Sanatorium, Middleton, 4 p. m. Tuberculosis conference in conjunction with Essex North.

January 23, 1924:—Lynn Hospital. Speaker, Dr. Frank H. Lahey of Boston.

March 19, 1924:—Salem Hospital.

May 7, 1924:—Annual meeting, Relay House, Nahant, in conjunction with Lynn Medical Fraternity.

*Franklin District:*—Society meets at Greenfield the second Tuesday of January, March, May, July, September. Annual meeting in May.

*Hampden District:*—The meetings for the year are as follows:

January, 1924, at Springfield. April, 1924, at Springfield; annual meeting.

*Hampshire District Medical Society:*

Meetings held bi-monthly, the second Wednesday in the month, at Boyden's Restaurant, Northampton.

*Middlesex South District Medical Society:*

January 30, 1924:—Combined meeting with Suffolk District at the Boston Medical Library.
February 27, 1924:—Combined meeting with the Surgical Section of Suffolk District at the Boston Medical Library.
March, 1924:—Hospital meeting; place not yet determined.
April, 1924:—Annual meeting.

*Norfolk South District:*—Meetings first Thursday of each month at 11.30 a. m., January, February, March, April and May, at United States Hotel, Boston. The February and May meetings are stated meetings.

*Suffolk District Medical Society:*

January 30, 1924:—In association with the Boston Medical Library and the Middlesex South District Medical Society at the Boston Medical Library at 8.15 p. m.
February 27, 1924:—Meeting of Surgical Section, in association with the Middlesex South District at the Boston Medical Library at 8.15 p. m.
March 26, 1924:—Meeting of the Medical Section, in association with the Boston Association for the Prevention and Relief of Heart Disease, at the Boston Medical Library at 8.15 p. m.
April 30, 1924:—Annual meeting, to be held at the Boston Medical Library at 8.15 p. m.

*Worcester District:*—The meetings for the year are as follows:

January 9 at St. Vincent Hospital, Worcester.
February 13 at Memorial Hospital, Worcester.
March 13 at City Hospital, Worcester.
April 10—A public meeting.
May 8—Annual meeting.

### STATE, INTERSTATE AND NATIONAL SOCIETIES

Schedule of meetings of the *New England Dermatological Society:*

Wednesday, February 13, 1924, at 3 p. m., in the Skin Out-Patient Department, Massachusetts General Hospital.

Wednesday, April 9, 1924, at 3 p. m., in the Surgical Amphitheatre, Boston City Hospital.